Name: Key Advanced Math – Semester Test 12/15/2016

1) In the dart board to the right below, the white circle has a 4in diameter, the black circle has a 5in diameter, the grey circle has a 10in diameter.

(3) a) What is the probability that someone could get a dart in the black? $6.25-4=2.25$, $\frac{2.25}{25}=9\%$

b) What is the probability that someone would not get a dart in the grey? $\frac{6.25}{25}=25\%$

(3) 2) Solve the follow polynomial: $x^4 + x^3 - 12x^2 + 4x + 16 = 0$ $x = 2$ (mult 2), $-4, -1$

3) A survey asked 100 people if they lived in a shoe. The survey was twenty percent women. Twenty-five percent of the women said yes and forty percent of the men said no. Fill in the two-way table and answer the questions about it. See work.

(6) a) What is the probability that a random person picked would live in a shoe? 53%

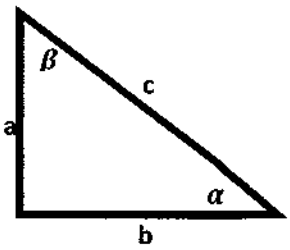
b) What is the probability that a random person picked would be a male or live in a shoe? 85%

c) What is the probability that a random person picked would be a female and not live in a shoe? 15%

d) What is the probability that a random person picked would be a male or be a female? 100%

4)

(6) Using the triangle on the right and the values given, find all the missing sides and angles in the following chart.



5) Sketch the graph of the function given.

(3) $f(x) = 2x^3 + 4x^2 - 2x - 4$

6) If I randomly assigned our 5-person class into groups of 2, what is the probability that Seth would be on a team with Ericka?

(3) ${}_5C_2 = \frac{5!}{3!2!} = 10$ $\frac{1}{10} = 10\%$

7) Picking a card out of a standard 52-card deck. Let A = drawing an odd numbered card.

(4) a) P(A) = $\frac{16}{52}$ b) P(A') = $\frac{36}{52}$ c) P(Queen) = $\frac{4}{52}$ d) P(Hearts) = $\frac{13}{52}$

8) Give the definitions of the following trigonometric functions. You may use the abbreviations

(3) that I used in class.

26.

9) There are 12 blue marbles, 5 green marbles, and 9 red marbles in a bag. Give answers as a percent.

(6) a) What is the probability that Mr. Peterson will draw a yellow marble?

b) What is the probability that Seth will draw a blue one and then a green one without replacing? $\frac{12}{26} \cdot \frac{5}{25}$

c) What is the probability that Ericka will draw a green or blue marble? $\frac{17}{26}$

X) What is the probability that Sam will not draw a blue marble? $\frac{14}{26}$

Y) What is the probability that Savanna will draw a red marble? $\frac{9}{26}$

z) What is the probability that Chey will draw a red one and then a blue one if she replaces the first marble? $\frac{9}{26} \cdot \frac{12}{26}$

10) Write a rule for each of the following functions and describe the transformations done.

(4) $f(x) = x^2 - 2x + 3$

a) $g(x) = -4f(x) - 5$

$-4x^2 + 8x - 12 - 5$

$-4x^2 + 8x - 17$

b) $g(x) = f(x-3) + 9$

$(x-3)^2 - 2(x-3) + 3 + 9$

$+12.$

(2) 11) Divide by using long division: $(x^3 - 7x^2 + 12x) \div (x^2 - 3x)$

$$\begin{array}{r} x-4 \\ x^2-3x \overline{)\, x^3-7x^2+12x} \\ -x^3+3x^2 \\ \hline -4x^2+12x \\ +4x^2-12x \\ \hline 0 \end{array}$$

(3) 12) Write the simplest polynomial function with the given zeros: $\sqrt{3}, -4, 8$

$(x^2-3)(x+4)(x-8)$

(3) 13) A survey of 120 students of Jamestown HS's 1500 students. Predict the number of students in the population that would answer similarly.

a) 45 said they were going to college. $\frac{45}{120} = \frac{x}{1500}$ $x = 563$

b) 90 said they were going to graduate high school. $\frac{90}{120} = \frac{x}{1500}$ $x = 1125$

(3) 14) Combine like terms.

a) $x^2 - 5x - 9 + 2x^3 - 3x + 4$

b) $5x^3 - 3x - 1 - (x^2 - 4x - 3)$ $\quad -x^2 + 4x + 3$

(3) 15) a) What is the probability of drawing a non-face card and then drawing a king without replacing? $\frac{40}{52} \cdot \frac{4}{51} = 6.03\%$

b) What is the probability of flipping a heads and then rolling an even? $\frac{1}{2} \cdot \frac{1}{2}$

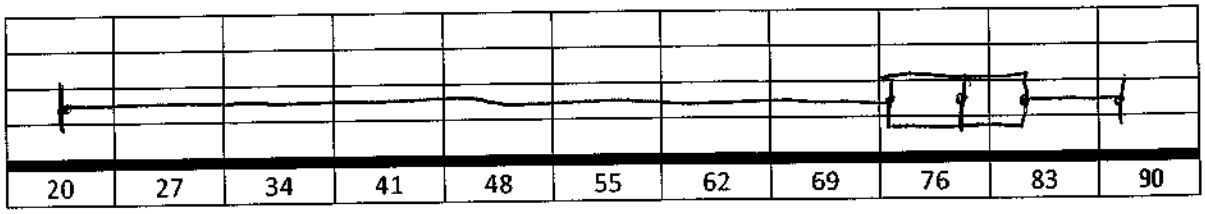
c) I have 6 black socks and 10 of white socks, what is the probability that I can draw two consecutive socks and have a pair of black socks? $\frac{6}{16} \cdot \frac{5}{15} = 12.5\%$

16) Using the numbers above, find the following values and make a box-and-whisker plot:

77.5

20	72	72	73	74	75	76	79	81	81	82	85	86	88

(4)



17) How do you read:

a) P(A∪B): "probability of A or B."

b) P(A|B): "probability of A given B."

(4) c) How do you read: ${}_6C_2$

"6 things taken 2 at a time."

d) P(A∩B): "probability of A and B."

18) What the formulas with the calculation:

B	Mutually Exclusive: $P(A \cup B)$	A) $P(A) * P(B)$
C	Non-Mutually Exclusive: $P(A \cup B)$	B) $P(A) + P(B)$
A	Independent: $P(A \cap B)$	C) $P(A) + P(B) - P(A \cap B)$
D	Dependent: $P(A \cap B)$	D) $P(A) * P(B\|A)$

(2)

19) Write the following polynomials in standard form. Name the polynomial and identify the leading coefficient.

(4) a) $2x + 10x^3$ $\quad 10x^3 + 2x$

b) $9x - 7x^4 + 5^2$ $\quad -7x^4 + 9x + 5^2$

Key

Ad. Math.

ANSWERS ONLY!!

1A) 9%

1B) 25%

2) M2 2, -4, -1

3)

	Men	Women	
Yes	48	5	53
No	32	15	47
	80.	20	100

3A) 53%

3B) 85%

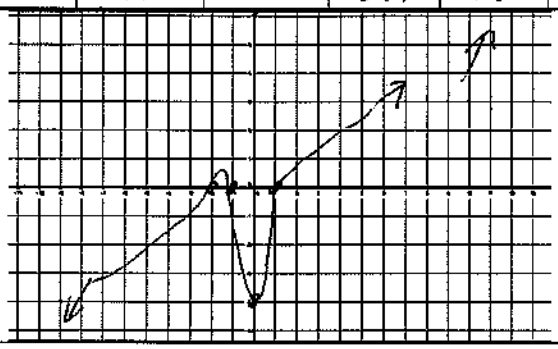
3C) 15%

3D) 100%

4)

Given:	α	β	a	b	c
a)	45°	45°	7	7	$7\sqrt{2}$
b)	75°	15°	8.7	2.3	9

5)



6) 10%

7A) 30.8%

7B) 69.2%

7C) 7.7%

7D) 25%

8) $\sin(\theta) = \frac{opp}{hyp.}$ $\cos(\theta) = \frac{adj.}{hyp.}$ $\tan(\theta) = \frac{opp}{adj.}$

9A) 0%

9B) 9.2%

9C) ~~6.5%~~ 65.4%

9X) 53.8%

9Y) 34.6%

9Z) 16%

10A) $-4x^2+8x-17$

10B) $(x-3)^2-2(x-3)+12$.

11) ~~$x^4-4x^3-35x^2+12x+96$~~

12) $x^4-4x^3-35x^2+12x+96$

13A) 563 students

13B) 1125 students.

14A) $2x^3+x^2-8x-5$

14B) $5x^3-x^2+x+2$.

15A) ~~18.1%~~ 6.03%

15B) 25%

15C) 12.5%.

16)
MIN 20
LOWER 73
MEDIAN 77.5
UPPER 82
MAX ~~98~~88
IQR 9

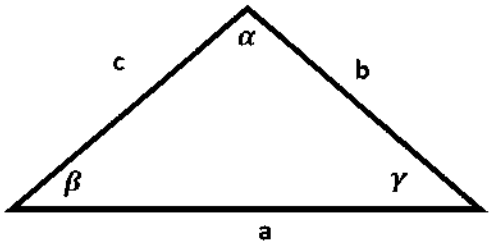
19A) $10x^3+2x$, LC 10

19A) cubic binomial.

19B) $-7x^4+9x+5^2$, LC -7

19B) quartic trinomial.

Name: Key
Advanced Math – Test 4
1/31/2017



$\frac{c}{\sin(100)} = \frac{8}{\sin(30)}$

$c =$

$\frac{a}{\sin(50)} = \frac{8}{\sin(30)}$

1) Using the triangle above, find the missing values of the triangle for each situation.

(6)

Given:	α	β	γ	a	b	c
a)	50°	30°	100°	12.3	8	15.8
b)	~~96°~~ 51.7	(96°)	32.3.	6	7.6	4

$b^2 = 6^2 + 4^2 - 2(6)(4)\cos(96)$

$b^2 = 57$

$b = 7.6$

2) Fill in the following table for the angles given.

(6)

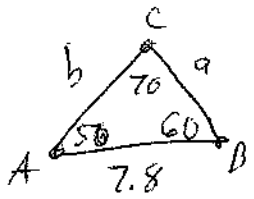
θ →	a) 210° 30	b) −135° 45	c) $\frac{7\pi}{3}$ 60°
Quadrant:	III	III	I
sin(θ)	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$+\frac{\sqrt{3}}{2}$
cos(θ)	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$+\frac{1}{2}$
tan(θ)	$+\frac{\sqrt{3}}{3}$	+ 1	$+\sqrt{3}$
csc(θ)	− 2	$-\sqrt{2}$	$+\frac{2\sqrt{3}}{3}$
sec(θ)	$-\frac{2\sqrt{3}}{3}$	$-\sqrt{2}$	+ 2
cot(θ)	$+\sqrt{3}$	+ 1	$+\frac{\sqrt{3}}{3}$

$\frac{\sin\alpha}{6} = \frac{\sin(96)}{7.6}$

$\alpha = 51.7$

3) Two forest rangers stationed 7.8 miles apart at points A and B in a mountain range observe the same illegal campfire at point C some distance away. They measure angles CAB and CBA to be 50° & 60° respectively. How far is each ranger from the campfire?

(4)



$\frac{b}{\sin(60)} = \frac{7.8}{\sin(70)}$

$b = 7.2$ mi.

$a = 6.4$ mi

4) Find the area of the triangles described in #1.

(6) a) $\frac{1}{2}(12.3)(8)\sin(100) = 48.5$ unit^2 b) $\frac{1}{2}(6)(7.6)\sin(32.3) = 12.2$ units^2

5) Convert the following angles from radians to degrees or vis versa. Leave π in your answer.

(8) a) $115° \left| \frac{\pi}{180} = \frac{23\pi}{36}$ b) $\frac{9\pi}{8} \left| \frac{180}{\pi} = 202.5°$

c) $225° \left| \frac{\pi}{180} = \frac{5\pi}{4}$ d) $\frac{7\pi}{9} \left| \frac{180}{\pi} = 140°$

6) Find ALL possible values of each expression. Leave your answers in degrees.

(6) a) $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ $300° + 360n$, $240° + 360n$ b) $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$ $30° + 360n$, $210° + 360n$.

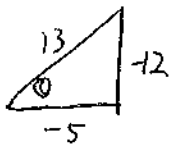
7) Solve the following equations to the nearest tenth. Use the given restrictions.

(6) a) $\cos(\theta) = -.89$, for $180° < \theta < 270°$ $\theta = 152.9°$ $\theta_R = 27.1$ $\theta = 207.1$

b) $\sin(\theta) = .45$, for $90° < \theta < 180°$ $\theta_R = 26.7$ $\theta = 153.3$

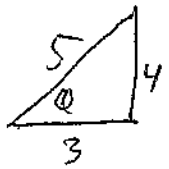
8) Given the following points. Find the exact value of the six trig functions.

8 a) $P(-5,-12)$



$\sin = -12/13$
$\cos = -5/13$
$\tan = 12/5$
$\csc = 13/-12$
$\sec = 13/-5$
$\cot = 5/12$.

b) $Q(3,4)$



$\sin = 4/5$
$\cos = 3/5$
$\tan = 4/3$
$\csc = 5/4$
$\sec = 5/3$
$\cot = 3/4$.

$16x-9$

$3x+1 \;\overline{)\; 48x^2-11x-9}$

$-(48x^2+16x)$

$-27x-9$

$+27 \quad +9$

Name: Key 2/21/2017 Advanced Math – Test 5

1) Determine whether each data set represents a direct variation, an inverse variation, or neither.

X	2	3	5
Y	15	10	6

$2\cdot 15 = 3\cdot 10 = 5\cdot 6$. inverse.

X	1	2	3
Y	5	10	15

$\frac{5}{1} = \frac{10}{2} = \frac{15}{3}$ direct.

3

X	3	6	9
Y	12	24	36

$\frac{12}{3} = \frac{24}{6} = \frac{36}{9}$ direct.

	$3x$	4
x	$3x^2$	$4x$
2	$6x$	8

24
10

2) Multiply. Assume all expressions are defined. $(x-4)(x+2)$

(6) a) $\frac{x-2}{x-3} * \frac{2x-6}{x+5}$ $2(x-3)$ $= \frac{2(x-2)}{x+5}$

b) $\frac{x^2-2x-8}{9x^2-16} * \frac{3x^2+10x+8}{x^2-16}$ $(3x+4)(x+2)$ $= \frac{(x+2)^2}{(3x-4)(x+4)}$

$(3x-4)(3x+4)$ $(x-4)(x+4)$

3) Divide. Assume all expressions are defined. $(x-3)(x+1)$ $(x+5)(x-3)$

(6) a) $\frac{x+2}{x-4} \div \frac{1}{3x-12}$ $\frac{3(x-4)}{1} = 3(x+2)$

b) $\frac{x^2-2x-3}{x^2-x-2} \div \frac{x^2+2x-15}{x^2+x-6}$ $= \frac{x+3}{x+5}$

$(x-2)(x+1)$ $(x+3)(x-2)$

	$3x$	-2
$4x$	$12x^2$	$-8x$
-1	$-3x$	$+2$

4) Add or subtract.

(6) a) $\frac{3x-2}{x+2} + \frac{2x}{4x-1}$ $\frac{(4x-1)}{(4x-1)}\frac{(x+2)}{(x+2)}$ $= 12x^2-11x+2+2x^2+4x$

$= \frac{14x^2-7x+2}{(4x-1)(x+2)}$

b) $\frac{4x-5}{12x+4} + \frac{3x-1}{3x+1}$ $\cdot 4$ $4(3x+1)$

$\frac{4x-5+12x-4}{4(3x+1)}$

$\frac{16x-9}{4(3x+1)}$

5) Simplify the following.

(3) $\dfrac{\frac{3x-2}{x^2-4}}{\frac{5x+2}{x^2+x-6}}$ $\dfrac{(3x-2)(x+3)(x-2)}{(x-2)(x+2)(5x+2)} = \dfrac{(3x-2)(x+3)}{(x+2)(5x+2)}$

6) Solve each equation.

(6) a) $x + \frac{4}{x} = 4$ $\cdot x$

$x^2-4x+4=0$

$(x-2)(x-2)=0$

$x=2$ DR.

b) $\left(\frac{2}{x(x-1)} = 1 + \frac{2}{x-1}\right) x(x-1)$

$2 = x^2-x+2x$

$0 = x^2+x-2$

$= (x+2)(x-1)$

$x=-2, \cancel{1}$

$2x-3<0$
$x<3/2$.

7) Solve the following.

a) $\left(2\sqrt[3]{x}\right)^3=\left(\sqrt[3]{x+7}\right)^3$

(6) $8x = x+7$

$7x=7$

$x=1$.

b) $\sqrt{2x-3}\le 5$

$2x-3\le 25$

$2x\le 28$

$x\le 14$.

$3/2$ 14

$\frac{3}{2}\le x\le 14$.

8) Solve the following.

a) $\frac{8}{x+1}\ge\frac{4}{1}$

$x+1>0$

$x>-1$

(6) $8\ge 4x+4$.

$4x\le 4$

$x\le 1$

$-1<x\le 1$.

b) $x\ge\frac{4}{x}$

$x^2\ge 4$

$x^2-4\ge 0$

$(x-2)(x+2)\ge 0$

x	$-$	$-0+$	$+$
$x+2$	$-0+$	$+$	$+$
$x-2$	$-$	$-0+$	$+$

-2 2

$[-2,0)$

$(-\infty,-2]\cup[2,\infty)$

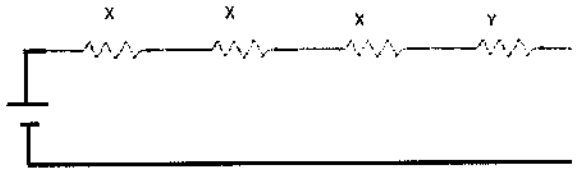
accept $[2,\infty)$

9) The measured ohms across the first circuit was 21. The measured ohms across the second circuit was 26.

(5) 2 a) Solve for x and y.

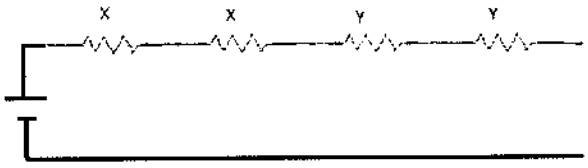
1 b) How are these resistors hooked together? Series.

2 c) If we connected x and y in parallel, what would you expect for a resistance measurement?



$2(3x+y=21)$

$2x+2y=26$.



$6x+2y=42$

$2x+2y=26$

$4x=16$

$x=4$

$y=9$.

$\frac{1}{4}+\frac{1}{9}=\frac{1}{R_3}$

$\frac{13}{36}=\frac{1}{R_3}$

$R_3=2.77\Omega$

Name: Key.   3/9/2017   Advanced Math – Test 6

1) Simplify the following and write your answer in scientific notation.

(12)

a) $\frac{7.65*10^{-2}}{5.67*10^{4}}$ 1.349×10^{-6}

b) $(42.3 * 10^{4})(6.23 * 10^{-14})$ 2.635×10^{-8}

c) $(10^{5} * 10^{4})^{-2}$ 10^{-18}.

d) $(7.54 * 10^{-2})(3.45 * 10^{9})$ 2.601×10^{8}

2) Give the name of the following units.

(4)

a) dJ decijoule

b) km kilometer

c) mg milligram

d) hL ~~heto~~ hectoliter.

3) Give the abbreviation of the following units.

(4)

a) picowatt pW

b) centimeter cm

c) microsecond mcs or μs

d) millijoule mJ

4) One Step Conversions

(8)

a) 0.0723 kJ to J

7.23×10^{-2} kJ | 10^3 J / 1 kJ = **7.23×10 J**

b) 445 s to ms

4.45×10^{2} s | 10^3 ms / 1 s = **4.45×10^{5} ms.**

c) 15.2 μg to g

1.52×10 μg | 1 g / 10^6 μg = **1.52×10^{-5} g**

d) 9368 m to Mm

9.368×10^{3} m | 1 Mm / 10^6 m = **9.368×10^{-3} Mm**

5) Two Step Conversions

(12)

a) 936800 dm to Mm

9.368×10^{5} dm | 1 m / 10 dm | 1 Mm / 10^6 m = **9.368×10^{-2} Mm**

b) 587.1 Mg to μg

5.871×10^{2} Mg | 10^6 g / 1 Mg | 10^6 μg / 1 g = **5.871×10^{14} μg**

c) 319000 cL to ML

3.19×10^{5} cL | 1 L / 10^2 cL | 1 ML / 10^6 L = **3.19×10^{-3} ML**

d) 0.4744 nJ to μJ

4.744×10^{-1} nJ | 1 J / 10^9 nJ | 10^6 μJ / 1 J = **4.744×10^{-4} μJ**

6) Basic Conversions

(12)

a) 28.68 tsp to mL

28.68 tsp | 1 T / 3 tsp | 1 fl oz / 2 T | 1 c / 8 fl oz | 1 pt / 2 c | 1 qt / 2 pt | 1 L / 1.057 qt | 10^3 mL / 1 L

~~3.557×10 mL~~ **1.423×10^{2} mL**

b) 2635000 sec to years **8.378×10^{-2} years**

2635000 sec | 1 min / 60 sec | 1 hr / 60 min | 1 day / 24 hr | 1 wk / 7 days | 1 yr / 52 wk

c) 0.004279 tons to g

.004279 tons | 2000 lbs / 1 tons | 16 oz / 1 lbs | 28.3 g / 1 oz = **3.875×10^{3} g**

d) 0.3694 m to ft

.3694 m | 10^2 cm / 1 m | 1 in / 2.54 cm | 1 ft. / 12 in = **1.212 ft**

7) Sam has driven $9 * 10^{10} mil$ in 1000hr. How fast was she going?

(3) $\frac{9\times10^{10}\ mil}{1000\ hr}\left|\frac{5{,}280\ ft}{1\ mil}\right|\frac{12\ in}{1\ ft}\left|\frac{2.54\ cm}{1\ in}\right|\frac{1\ m}{10^2\ cm}\left|\frac{1\ hr}{60\ min}\right|\frac{1\ min}{60\ sec} = 4.023\times10^{7}\ m/s$

8) Seth drove 90ft at 600m/hr. How long did it take him?

(3) $\frac{90\ ft}{600\ m}\left|\frac{1\ hr}{1\ hr}\right|\frac{60\ min}{1\ min}\left|\frac{60\ sec}{1\ ft}\right|\frac{12\ in}{1\ in}\left|\frac{2.54\ cm}{10^2\ cm}\right|\frac{1\ m}{} = 1.646\times10^{2}\ sec$

9) Chey is driving 456ft/sec for 20hr. How far has she gone?

(3) $\frac{456\ ft}{sec}\left|\frac{20\ hr}{}\right|\frac{12\ in}{1\ ft}\left|\frac{2.54\ cm}{1\ in}\right|\frac{1\ m}{10^2\ cm}\left|\frac{60\ min}{1\ hr}\right|\frac{60\ sec}{1\ min} = 1.001\times10^{7}\ m$

10) Savanna mixes $100g$ of $Pb(OH)_2$ with $40g$ of HCl.

$$Pb(OH)_2 + 2HCl \rightarrow 2H_2O + PbCl_2$$

a) What is the limiting reagent?

(4) $\frac{100g\ Pb(OH)_2}{241\ g}\left|\frac{1\ mol}{1\ Pb(OH)_2}\right|\frac{2\ HCl}{} = .83\ mol\ HCl$

$\frac{40g\ HCl}{36.5g}\left|\frac{1\ mol}{}\right. = 1.10\ mol\ HCl$

$Pb(OH)_2$

b) What is the maximum amount of $PbCl_2$ formed?

(2) $\frac{.83\ mol\ HCl}{2\ HCl}\left|\frac{1\ PbCl_2}{1\ mol}\right|\frac{278\ g}{} = 115.4g\ PbCl_2$

c) How much of the other reagent is left over after the reaction is complete?

(2) $\frac{.27\ mol\ HCl}{1\ mol}\left|\frac{36.5\ g}{}\right. = 9.86\ g\ HCl$

d) If $100g$ of $PbCl_2$ is formed, what was the percent yield?

(2) $\frac{100}{115.4} = 86.7\%$

Bonus: What is this form of unit conversions called?

unit analysis.

Bonus: Convert 5~~tsp~~ cc to ~~mL~~ ~~cc~~ tsp.

$\frac{5\ tsp}{3\ tsp}\left|\frac{1\ T}{2\ T}\right|\frac{1\ fl\ oz}{8\ fl\ oz}\left|\frac{1\ c}{2\ c}\right|\frac{1\ pt}{2\ pt}\left|\frac{1\ qt}{1.05\ qt}\right|\frac{1\ L}{10^3\ mL}\left|\frac{10^3\ mL}{1\ L}\right|\frac{1\ cc}{1\ mL} =$

$\frac{5\ cc}{1\ cc}\left|\frac{1\ mL}{10^3\ mL}\right|\frac{1\ L}{1\ L}\left|\frac{1.05\ qt}{1\ qt}\right|\frac{2\ pt}{1\ pt}\left|\frac{2\ c}{1\ c}\right|\frac{8\ fl\ oz}{1\ fl\ oz}\left|\frac{2\ T}{1\ T}\right|\frac{3\ tsp}{} = 1.008\ tsp$

Name: 4/12/2017 Advanced Math – Test 7

1) Express each logarithm as the sum or difference of simpler logarithmic expressions.

(12)

a) $\log_3(x^2\sqrt[3]{y})$ $2\log_3(x) + \frac{1}{3}\log_3(y)$

b) $\log_2\left(\frac{x}{z}\right)$ $\log_2(x) - \log_2(z)$

c) $\log_7\left(\frac{CO}{DY}\right)^2$ $2\log_7(C) + 2\log_7(O) + 2\log_7(D) + 2\log_7(Y)$

d) $\log_4(16y^7)$ $\log_4(16) + 7\log_4(y)$ $2 + 7\log_4(y)$

2) Change each equation to logarithmic form.

(4)

a) $12^2 = 144$ $\log_{12}(144) = 2$.

b) $2^4 = 61$ $\log_2(61) = 4$ $\log_2(16) = 4$ (+.5)

3) Change each equation to exponent form.

(4)

a) $\log_3 27 = 3$ $3^3 = 27$

b) $\log_6\left(\frac{1}{36}\right) = -2$ $6^{-2} = \frac{1}{36}$.

4) Evaluate each expression.

(6)

a) $\log_y(\sqrt{y})$ $\frac{1}{2}$

b) $6^{\log_6 x^3}$ x^3

c) $\ln(e^4)$ 4

d) $x^{\log_x 10}$ 10

5) Solve each equation. Round to 3 decimal places if necessary.

(6)

a) $\log_3(17) = \log_3(4x - 3)$

$17 = 4x - 3$

$\frac{20}{4} = \frac{4x}{4}$ $x = 5$

b) $7^{2x} = 7^{x-1}$

$2x = x - 1$

$x = -1$

6) State x in terms of common logarithms.

(8)

a) $8^x = 977$ $x\log 8 = \log 977$ $x = \frac{\log 977}{\log 8}$

b) $x = \log_8 70$ $x = \frac{\log 70}{\log 8}$

c) $4^{-x} = 100$ $-x\log 4 = \log 100$ $x = \frac{-2}{\log 4}$

d) $8^x = \sqrt{14}$ $x = \frac{1\log 14}{2\log 8}$.

7) Solve each equation.

a) $\log_6(x) - \log_6(9) = \log_6(10)$ (12)

$\frac{x}{9} = 10$ $x = 90$

b) $\log_2(8) + \log_2(x-2) = \log_2(4x)$

$8(x-2) = 4x$

$8x - 16 = 4x$

$4x = 16$

$x = 4$

c) $\log(y-5) + \log(y+1) = \log(16)$

$(y-5)(y+1) = 16$

$y^2 - 4y - 5 = 16 \rightarrow y^2 - 4y - 21 = 0 \rightarrow (y-7)(y+3) = 0 \rightarrow y = 7$ ~~-3~~

d) $\log_5(5) + \frac{1}{2}\log_5(9) = \log_5(x)$

$5 \cdot 9^{\frac{1}{2}} = x$

$15 = x$

8) The equation for growth and decay is given by: $A = A_0 e^{kt}$. What do **A**, A_0, **k**, and **t** stand for? (4)

A = actual/current amount

A_0 = initial amount.

k = konstant

t = time.

9) After 1000 megayears, half of a 60 milligram sample of potassium-40 is left. (8)

a) What is the k for potassium?

b) How much is left after 650 megayears?

c) How long ~~until~~ there is only 13 milligrams left?

d) From (c), how many years is that??!?!

$30 = 60e^{1000k}$ $k = \frac{\ln(\frac{1}{2})}{1000}$

b) $A = 60e^{650k}$ b) $k = -.000693$

$= 38.2$ mg

$13 = 60e^{kt} \rightarrow t = \frac{\ln(\frac{13}{60})}{k}$ c) $= 2206$ Myears $\rightsquigarrow 2206 \times 10^6$ years d) 2.206×10^9 years

2.206 Gyears

10) A strain of bacteria has k = **.987** when t is measured in days. How long will it take 60 bacteria to increase to 987 bacteria? (3)

~~A=~~ $987 = 60e^{.987t}$

$t = 2.89$ days

11) Savanna has continued her bad spending habit. She spends 20% of Sam's college savings each month.

a) If Sam started with $20,000, how much money will Sam have by the time she starts college (3.5 months)?

b) If college costs $10,000 per year, will Sam still be able to afford her first year of college? No! (4)

c) When should Sam have stopped Savanna in order to pay for her first year?

$A = 20000(.8)^{3.5}$

$= \$9158.93$ a)

$10000 = 20000(.8)^t$

$t = \frac{\ln(\frac{1}{2})}{\ln .8} = 3.1$ months $\rightsquigarrow$ beginning of August.

Bonus: Given: $\log_b 2 = .36$, $\log_b 3 = .56$, and $\log_b 5 = .83$. Calculate the following.

a) $\log_b(30)$

$.56 + .36 + .83$

$= 1.75$

b) $\log_b\left(\frac{10}{3}\right)$

$.36 + .83 - .56$

$= .63$

c) $\log_b 27$ $27 = 3^3$

$3 \cdot (.56)$

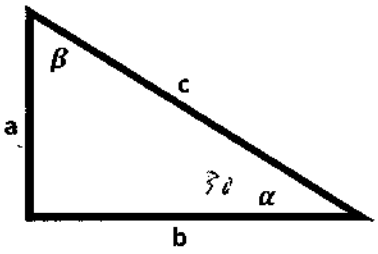
$(.36)$

$= 1.68$

1.68

Name: key.
1/13/2017
Advance Math Quiz 13 14

1) Using the triangle on the right and the values given, find all the missing sides and angles in the following chart.



Given:	α	β	a	b	c
a)	30°	60	5	$5\sqrt{3}$	10
b)	65	25°	5.4	2.5	6

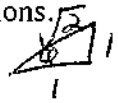
$\sin(65) = \frac{a}{6}$
$\sin(25) = \frac{b}{6}$

2) Fill in the following table for the angles given.

$\theta \rightarrow$	a) 120°	b) −135°
$\sin(\theta)$	$\sqrt{3}/2$	$-\sqrt{2}/2$
$\cos(\theta)$	$-1/2$	$-\sqrt{2}/2$
$\tan(\theta)$	$-\sqrt{3}$	+1

3) Given the following points. Find the exact value of the six trig functions.

a) $P(-2,4)$ 

b) $Q(1,1)$ 

4) a) The standard form of an angle is read from the + x-axis in the counter-clockwise direction.

b) A reference angle is always read from the x-axis and is always between 0 and 90 degrees.

5) What does IRS stand for? internal revenue service.

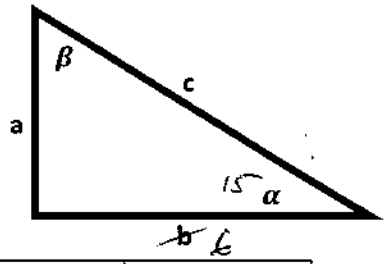
6) Match the following forms with their definitions

C	W-2	A. form used by employees to inform employers of exemptions
A	W-4	B. form used to report income to the state
D	1040	C. form used by employers to report income paid to an employee
B	ND-1	D. form used to report income to the IRS

a) $\sin(\theta) = \frac{4}{2\sqrt{5}} = \frac{2\sqrt{5}}{5}$
$\cos(\theta) = \frac{-2}{2\sqrt{5}} = -\sqrt{5}/5$
$\tan(\theta) = -2$
~~$\sec(\theta)$~~
$\csc(\theta) = \sqrt{5}/2$
$\sec(\theta) = -\sqrt{5}$
$\cot(\theta) = -\frac{1}{2}$.

b) $\sin(\theta) = \sqrt{2}/2$
$\cos(\theta) = \sqrt{2}/2$
$\tan(\theta) = 1$
$\csc(\theta) = \sqrt{2}$
$\sec(\theta) = \sqrt{2}$
~~$\tan$~~ $\cot(\theta) = 1$

Name: Key
1/20/2017
Advance Math Quiz ~~1~~ 15



1) Using the triangle on the right and the values given, find all the missing sides and angles in the following chart. $\sin 75 = \frac{6}{c}$

Given:	α	β	a	b	c
a)	15°	75°	~~2.56~~1.6	6	6.21
b)	70°	20°	7	~~6.52.55~~	7.45

$\sin(70) = \frac{7}{c}$

2) Fill in the following table for the angles given.

$\theta \rightarrow$	a) 270°	b) $\frac{\pi}{4}$
$\sin(\theta)$	-1	$\sqrt{2}/2$
$\cos(\theta)$	0	$\sqrt{2}/2$
$\tan(\theta)$	und.	1

3) Find the value of the following angles from $0^\circ \le \theta \le 180^\circ$

a) $\sin(\theta) = .2588$ 15°

b) $\cos(\theta) = -.5592$ 124°

4) Convert the following angles from radians to degrees or vis versa. Leave π in your answer.

a) $\frac{235^\circ \mid \pi}{\mid 180} = \frac{47\pi}{36}$

b) $\frac{\frac{\pi}{8} \mid 180^\circ}{\mid \pi} = 22.5^\circ$

5) Find ALL possible values of each expression. Leave your answers in degrees.

a) $\sin^{-1}\left(-\frac{1}{2}\right)$ $30^\circ R$ $210^\circ + 360n$ $330^\circ + 360n$

b) $\tan^{-1}(\sqrt{3})$ $60 R.$ $60^\circ + 360n$, $240 + 360n$.

6) Solve the following equations to the nearest tenth. Use the given restrictions.

a) $\cos(\theta) = -.25$, for $180^\circ < \theta < 270^\circ$

$\theta = 104.5^\circ$

$\theta = 75.5^\circ R.$ 255.5°

$180 + 75.5^\circ$

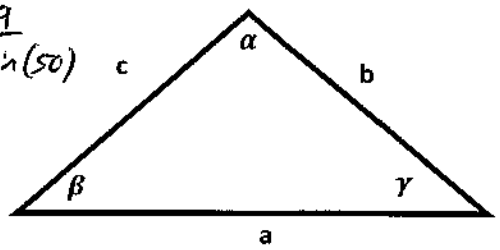
b) $\sin(\theta) = .25$, for $90^\circ < \theta < 180^\circ$

$\theta = 14.5^\circ$

$180 - 14.5 = 165.5^\circ$

Name: Key
1/27/2017
Advance Math Quiz 16

$\frac{5}{\sin(35)} = \frac{9}{\sin(50)}$



1) Using the triangle above, find the missing values of the triangle for each situation.

Given:	α	β	γ	a	b	c
a)	50°	35°	95°	6.7	5	8.7
b)	55.2°	55.2°	69.7	7	7	8

$c^2 = a^2 +$
$8^2 = 7^2 + 7^2 - 2(7)(7)\cos(\gamma)$
$\cos(\gamma) = .3469$
$\gamma = 69.7$

2) Fill in the following table for the angles given.

$\theta \rightarrow$	b) 225°	b) $-\frac{\pi}{3}$
$\sin(\theta)$	$-\sqrt{2}/2$	$-\sqrt{3}/2$
$\cos(\theta)$	$-\sqrt{2}/2$	$+1/2$
$\tan(\theta)$	$+1$	$-\sqrt{3}$

$\frac{1}{2}a \cdot b \sin(\gamma)$

3) Find the area of the triangles described in #1.

a) 16.7

b) ~~22~~ 23

4) Convert the following angles from radians to degrees or vis versa. Leave π in your answer.

a) $200° \left| \frac{\pi}{180°} \right. = \frac{10\pi}{9}$

b) $\frac{7\pi}{6} \left| \frac{180°}{\pi} \right. \quad 210°$

5) Find ALL possible values of each expression. Leave your answers in degrees.

a) $\cos^{-1}\left(\frac{1}{2}\right) = 60°$

$60° + 360°n$

b) $\tan^{-1}\left(-\frac{\sqrt{3}}{3}\right)$ $\quad -45° + 360°n$

$135° + 360°n$

6) Solve the following equations to the nearest tenth. Use the given restrictions.

a) $\sin(\theta) = -.85$, for $180° < \theta < 270°$

$-58.2°$

$180 + 58.2 = \boxed{238.2°}$

b) $\tan(\theta) = -1.25$, for $90° < \theta < 180°$

-51.3

$180 - 51.3 = \boxed{128.7°}$

Name: Key
2/9/2017
Advance Math Quiz 17

1) Sect 5.1 HW: Determine whether each data set represents a direct variation, an inverse variation, or neither.

inverse

X	5	6.25	10
Y	5	4	2.5

$5 \cdot 5 = 25$
$6.25 \cdot 4 = 25$
$10 \cdot 2.5 = 25$

X	8	14	24
Y	12	21	36

direct

$\frac{8}{12} \quad \frac{14}{21} \quad \frac{24}{36} = \frac{12}{8} = \frac{24}{16} \quad \frac{36}{24}$
$.6 \quad .6 \quad .6 \quad 1.5 \quad 1.5 \quad 1.5$

X	5	7	9
Y	3	5	7

$\frac{3}{5} \quad \frac{5}{7} \quad \frac{7}{9}$
$.8 \quad .7 \quad .\overline{7}$

neither

2) Multiply. Assume all expressions are defined.

a) $\frac{x-2}{2x-3} * \frac{4x-6}{x^2-4} = \frac{x-2}{2x-3} \cdot \frac{2(2x-3)}{(x-2)(x+2)} = \frac{2}{x+2}$

b) $\frac{x^2-16}{x^2-4x+4} * \frac{x-2}{x^2+6x+8} = \frac{(x-4)(x+4)}{(x-2)(x-2)} \cdot \frac{(x-2)}{(x+4)(x+2)} = \frac{x-4}{(x-2)(x+2)}$

3) Divide. Assume all expressions are defined.

a) $\frac{x^5y^4}{3xy} \div \frac{1}{x^3x} = \frac{x^5y^4}{1} \cdot \frac{x^2}{y} = x^7y^4$

b) $\frac{x^2-25}{2x^2+5x-12} \div \frac{x^2-3x-10}{x^2+9x+20} = \frac{(x-5)(x+5)}{(2x-3)(x+4)} \cdot \frac{(x+5)(x+4)}{(x-5)(x+2)} = \frac{(x+5)^2}{(2x-3)(x+2)}$

4) From question 2, what values are undefined?

a) $x \neq \frac{3}{2}, 2, -2$.

b) $x \neq 2, -4, -2$.

5) Add or subtract.

a) $\frac{2x-3}{4x-7} + \frac{2x-3}{4x-7} \quad \frac{4x-6}{4x-7}$.

b) $\frac{1}{x-4} - \frac{2}{x^2-6x+8} \quad (x-2)(x-4)$
$= \frac{(x-2)-2}{(x-4)(x-2)} = \frac{(x-4)}{(x-4)(x-2)} = \frac{1}{x-2}$

6) From question 5, what values are undefined?

a) $x \neq \frac{7}{4}$

b) $x \neq 4, 2$.

	$2x$	-3
x	$2x^2$	$-3x$
4	$8x$	-12

Name: key 2/17/2017 Advance Math Quiz 18

1) Simplify the following.

$$\frac{\frac{2x-5}{x^2-4}}{\frac{5x+1}{x+2}}$$

$\frac{(2x-5)(x+2)}{(x-2)(x+2)(5x+1)} = \frac{(2x-5)}{(x-2)(5x+1)}$

2) Add or subtract.

a) $\frac{2x}{x-5} - \frac{8}{x-8}$ $(x-8)$ $(x-5)$ $2x-8$ $= \frac{2x^2-16x-8x+40}{(x-8)(x-5)}$

$= \frac{2(x^2-12x+20)}{(x-8)(x-5)} = \frac{2(x-2)(x-10)}{(x-5)(x-8)}$

b) $\frac{1}{x^2-4} + \frac{2x}{x^2+5x+6} =$

$(x+1)$ $(x+3)(x-2)(x+2) + \frac{2x\ (x-2)}{(x+2)(x+3)(x-2)}$

$\frac{x+3+2x^2-4x}{(x+2)(x+3)(x-2)} = \frac{2x^2-3x+3}{(x+2)(x+3)(x-2)}$

$= (2x-1)(x+1)$

3) Solve each equation.

a) $\frac{4x}{x-3} + \frac{x}{2} = \frac{12}{x-3}$

$8x + x^2 - 3x = 24$

$x^2 + 5x - 24 = 0$

$(x+8)(x-3) = 0$

$x = -8, 3$

b) $\frac{5}{4} = \frac{x+3}{x+4}$

$4x+12 = 5x+20$

$x = -8$

4) Solve the following.

$\frac{25}{x+12} \geq 4$

$4x + 48 \leq 25$

$4x \leq -23$

$x \leq -5.75$

$x \geq -12$

$-12 \leq x \leq -5.75$

5) Solve the following.

a) $\sqrt{x-9} = 5$

$x - 9 = 25$

$x = 34$

b) $\sqrt{x-3} \leq 4$

$x - 3 \leq 16$

$x \leq 19$

$x \geq 3$

$3 \quad 19$

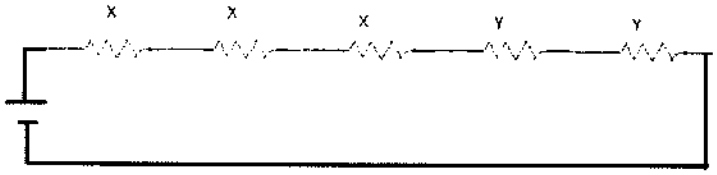
$[3, 19]$

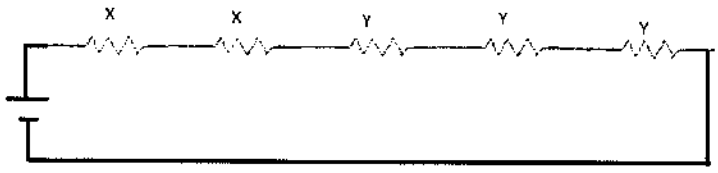
6) The measured olms across the first circuit was 29. The measured olms across the second circuit was 31.

a) Solve for x and y.

b) How are these resistors hooked together?

c) If we connected x and y in parallel, what would you expect for a resistance measurement?





$2(3x+2y = 29)$

$-3(2x+3y = 31)$

$6x + 4y = 58$

$-6x - 9y = -93$

$-5y = -35$

$y = 7\Omega$ $x = 5\Omega$

$\frac{1}{5} + \frac{1}{7} = \frac{1}{R_3}$

$\frac{7+5}{35} = \frac{1}{R_3}$

$R_3 = \frac{35}{12} = 2.92\Omega$

Name: Key 3/3/2017 Advanced Math Quiz 19

1) Give the name or abbreviation of the following units.

a) dJ decijoule	b) km kilometer
c) microsecond μsec	d) millijoule mJ

2) Write the following numbers in scientific notation.

a) 0.00462 4.62×10^{-3} | b) 64000 6.4×10^{4}

3) Two Step Conversions

a) $936800\ dm \left|\frac{1\ m}{10^{1}\ dm}\right|\left|\frac{1\ Mm}{10^{6}\ m}\right| = 9.368 \times 10^{-3}\ Mm$

b) $587.1\ Mg \left|\frac{10^{6}\ g}{1\ Mg}\right|\left|\frac{10^{6}\ \mu g}{1\ g}\right| = 5.871 \times 10^{14}\ \mu g$

4) Multiply/divide the following numbers. Write your answer in scientific notation.

a) $(8.56 * 10^{-5})(3.29 * 10^{29})$

$28.16 \times 10^{24} = 2.816 \times 10^{25}$

b) $\frac{3.69*10^{9}}{6.98*10^{-3}}$

$.5287 \times 10^{12}$

5.287×10^{11}

5) One Step Conversions

a) $0.0723\ kJ \left|\frac{10^{3}\ J}{1\ kJ}\right| = 7.23 \times 10^{1}\ J$

b) $445\ s \left|\frac{10^{3}\ ms}{1\ s}\right| = 4.45 \times 10^{5}\ ms$

6) Basic Conversions

a) $28.68\ c \left|\frac{1\ pt}{2\ c}\right|\left|\frac{1\ qt}{2\ pt}\right|\left|\frac{1\ gal}{4\ qt}\right| = 1.793\ gal$

b) $263500\ weeks \left|\frac{7\ days}{1\ weeks}\right| = 1.845 \times 10^{6}\ days$

**Bonus Savanna drove 1000m at 300km/hr. How long did it take her?

$1000m \left|\frac{1\ hr}{300\ km}\right|\left|\frac{1\ km}{10^{3}\ m}\right|\left|\frac{60\ min}{1\ hr}\right|\left|\frac{60\ sec}{1\ min}\right| = 12.00\ sec$

**Bonus: Mix $4g$ of Li with air. How much Li_2O is made?

$$4Li + O_2 \rightarrow 2Li_2O$$

$4\ g\ Li \left|\frac{1\ mol}{7\ g}\right|\left|\frac{2\ Li_2O}{4\ Li}\right|\left|\frac{30\ g}{1\ mol}\right| = 8.57\ g\ of\ Li_2O$

Name: Key 3/16/2017 Advanced Math Quiz 21

1) Express each logarithm as the sum or difference of simpler logarithmic expressions.

a) $\log_3(x^3\sqrt{y})$

$3\log_3(x) + \frac{1}{2}\log_3(y)$

b) $\log_7\left(\frac{SE}{TH}\right)^2$

$2\log_7(S) + 2\log_7(E) - 2\log_7(T) - 2\log_7(H)$

2) Change each equation to logarithmic form.

a) $7^4 = 2401$ $\log_7(2401) = 4$

b) $4^3 = 64$ $\log_4(64) = 3$.

3) Change each equation to exponent form.

a) $\log_3 9 = 2$ $3^2 = 9$

b) $\log_6\left(\frac{1}{36}\right) = -2$ $6^{-2} = \frac{1}{36}$.

4) Evaluate each expression.

a) $\log_n(n^3)$ 3

b) $6^{\log_6 n}$ n

5) Solve each equation.

a) $\log_3(5) + \log_3(x) = \log_3(15)$

$\log_3 5x = \log_3(15)$

$5x = 15$

$x = 3$

b) $\log_2(7) + \log_2(n-2) = \log_2(6n)$

$\log_2(7(n-2)) = \log_2(6n)$

$7n - 14 = 6n$

$n = 14$ ✓

Name: Key 3/24/2017 Advanced Math Quiz 22

1) Express each logarithm as the sum or difference of simpler logarithmic expressions.

a) $\log_8\left(\frac{x^4}{y}\right)$

$4\log_8(x) - \log_8(y)$

b) $\log_7(S\sqrt{A}M^3)$

$\log_7(S) + \frac{1}{2}\log_7(A) + 3\log_7(M)$

2) Solve each equation. Round to 3 decimal places if necessary.

a) $\log_3(12) = \log_3(5x - 3)$

$12 = 5x - 3$

$+3 \quad +3$

$x = 3$

b) $\log_4(3y) = \log_4(2y + 5)$

$3y = 2y + 5$

$y = 5$

3) Solve each equation.

a) $\log_3(5) + \log_3(x) = \log_3(15)$

$\log_3(5x) = \log_3(15)$

$x = 3$

b) $\log_2(7) + \log_2(n - 2) = \log_2(6n)$

$\log_2 7(n-2)$

$7n - 14 = 6n$

$n = 14$

4) State x in terms of common logarithms.

a) $3^x = 44$

$x = \frac{\log 44}{\log 3}$

b) $x = \log_5 7$

$x = \frac{\log 7}{\log 5}$

5) Solve each equation.

a) $\log_3(5) + \log_3(x) = \log_3(15)$

$x = 3$

b) $\log(y - 1) + \log(y + 2) = 1$

$(y-1)(y+2) = 10$

$y^2 + y - 2 = 10$

$y^2 + y - 12 = 0$

$y = -4, +3$

6) Convert the following numbers from the given base to the new base.

a) $14_5 = 9_{10}$

$\frac{1}{5} \quad \frac{4}{1}$

b) $77_{10} = 140_7$

140

**Bonus: $2_3 + 2_3 = 100_2$

Name: Key. 3/31/2017 Advanced Math Quiz 23

1) The equation for growth and decay is given by: $y = Pe^{kt}$. What do **y**, **P**, **k**, and **t** stand for?

constant
time.
initial amount
current amount.

2) After 800 years, half of a 40 milligram sample of uranium is left.
What is the k for uranium? $-.0008664$. $20 = 40e^{k \cdot 800}$ $\frac{\ln(.5)}{800}$
How much is left after 3000 years? 2.47mg
How long until there is only 8 milligrams left?
1857.5 years.

3) A strain of bacteria has k = **.654** when t is measured in days. How long will it take 50 bacteria to increase to 1000 bacteria?

$\frac{50}{1000} = e^{.654t}$

4.58 days

4) Sam wants to have $20,000 for college. If she invests $1500 in an account that earns 8% compounded continuously, how long will she have to leave the money in the account? ($A = Pe^{rt}$)

$20{,}000 = 1500e^{.08t}$

$t = 32.4$ years

5) There are very few important numbers in math that deserve their own symbol. You have now met them all. Below I give their symbols. A) What is the name of each (what are they called)? B) What number do they represent? (Round to 2 decimal places)

Symbol	Name	Number
a) π	Pi	3.14
b) e	Euler's #	2.718
c) i	imaginary #	$\sqrt{-1}$

6) Savanna has a bad spending habit. She spends 20% of her mom's life savings each month. If her mom started with $50,000. How long until her mom only has $1 left to her name? What year in college will Savanna be when her mom only has $1 left?

$1 = 50{,}000(.8)^x$

$x = 48.5$

48.5 months.
Freshman

Name: Key 4/7/2017 Advanced Math Quiz 24

1) The equation for growth and decay is given by: $A = A_0e^{kt}$. What do A, A_0, k, and t stand for?

k → constant, t → time, A_0 → initial amount, A → actual amount (current)

2) Solve the following problems.

a) $\ln(4) + \ln(x) = 2$

$4x = e^2$

$x = \frac{e^2}{4}$

b) $e^{\ln(x^3)} = 8$

$x^3 = 8$

$x = 2$

$13000 = 12000e^{k(8)}$

$k = .010005$

3) In 1991, there were 40,000 farms in North Dakota. In 1999, there were 34,000.

a) Find the value of k for the exponential decay of the number of farms.

b) Use you model to predict the number of farms there are today.

c) From 1991 to 1999, the average farm increased from 1200 acres to 1300 acres. Use an exponential model to predict the average farm size today.

1556.5 acres.

b) $A = 40000e^{k(26)}$

$= 23596$ farms

$\frac{34000}{40000} = \frac{40000e^{k(8)}}{40000}$

$8k = -.1625$

a) $k = -.0203$

4) Simplify the following.

a) $\ln(e^0)$

0

b) $e^{\ln(x-2)}$

$x-2$

c) $e^{4\ln x}$ $e^{\ln x^4}$

x^4

5) Savanna ~~has a~~ bad spending habit has gotten her into trouble. Her mom now wants her to pay back all the money. They set up a payment plan that starts 6 years from now. She must pay her mom 30% interest each month. If her mom starts with \$1 and Savanna is paying interest on the amount her mom has, how long will it be until Sally has her \$50, 000 back?

$50000 = 1(1+.3)^x$

$x = 25.3$ months

9 months

6) If $\log_2(\log_3(\log_4(a))) = \log_3(\log_4(\log_2(b))) = \log_4(\log_2(\log_3(c))) = 0$, what is $a + b + c$?

$= 0$ $= 0$ $= 0$

$\log_3(\ ) = 1$ $\log_4(\ ) = 1$ $\log_2(\ ) = 1$

$\log_4(a) = 3$ $\log_2(b) = 4$ $\log_3(c) = 2$

$a = 4^3$ $b = 2^4$ $c = 3^2$

$64 + 16 + 9 = 89$

Name: Key 4/21/2017 Advanced Math Quiz 26

1) Find the determinant of the following matrix

$\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$ $4-6=-2$.

2) Only setup matrices to represent the following systems of equations.

a) $\begin{cases} x+2y=-4 \\ -3x+5y=10 \end{cases}$ $\left[\begin{array}{cc|c} 1 & 2 & -4 \\ -3 & 5 & 10 \end{array}\right]$

b) $\begin{cases} -4x-y=0 \\ y=8 \end{cases}$ $\left[\begin{array}{cc|c} -4 & -1 & 0 \\ 0 & 1 & 8 \end{array}\right]$

2x2 2x3 3x2 2x2.

3) Given: $A=\begin{bmatrix}1 & 6\\ 0 & 3\end{bmatrix}$, $B=\begin{bmatrix}1 & -2 & 4\\ 10 & 0 & -3\end{bmatrix}$, $C=\begin{bmatrix}4 & 5\\ -1 & -2\\ 3 & 0\end{bmatrix}$, and $D=\begin{bmatrix}2 & 1\\ -4 & 6\end{bmatrix}$. Determine whether or not you add and multiply them in the following order. If you can, state the dimensions of the resulting matrix.

	Add/subtract	Multiply	New dimensions
a) A&B	No	yes	2x3
b) A&C	No	No	—
c) B&C	No	yes	2x2
d) B&A	No	No	—
e) C&A	No	yes	3x2
f) C&B	No	yes	3x3
g) A&D	yes	yes.	2x2.

4) For each of the following, show the work long hand to multiply the matrices.

a) $\begin{bmatrix}-2 & 7\\ 4 & -5\end{bmatrix}*\begin{bmatrix}1 & 2\\ -1 & 0\end{bmatrix}=\begin{bmatrix}-9 & -4\\ 9 & 8\end{bmatrix}$

$-2-7$ $-4+0$

$4+5$ $8+0$

b) $\begin{bmatrix}1 & 2 & 3\\ -4 & -5 & -6\end{bmatrix}*\begin{bmatrix}-1 & 4\\ -2 & 5\\ -3 & 6\end{bmatrix}=\begin{bmatrix}-14 & 32\\ 32 & -77\end{bmatrix}$

$-1-4-9$ $4+10+18$

$4+10+18$ $-16-25-36$

5) For the following, show the work long hand to add/subtract the matrices.

a) $\begin{bmatrix}-2 & 7\\ 4 & -5\end{bmatrix}+\begin{bmatrix}1 & 2\\ -1 & 0\end{bmatrix}=$

$\begin{bmatrix}-1 & 9\\ 3 & -5\end{bmatrix}$

b) $\begin{bmatrix}5 & 10\\ -2 & -9\end{bmatrix}-2\begin{bmatrix}4 & 2\\ -6 & 0\end{bmatrix}$

$\begin{bmatrix}-3 & 6\\ 10 & -9\end{bmatrix}$

6) When setting up matrices to represent a system of equations what is title given to each of the matrices?

variable vector

$\begin{bmatrix}\# & \#\\ \# & \#\end{bmatrix}\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}\#\\ \#\end{bmatrix}$

answer vector.

coefficient matrix