PreCalculus – level 2

Summer Packet

This packet of exercises reflects skills that the Math Department considers essential for your success in PreCalculus!

In this packet you will find the following:

- Questions on material previously learned in both Algebra 1/2 and Geometry.
- Topics from Khan Academy referenced in the directions for each problem set. If you are having difficulty recalling how to do a specific type of problem, the Khan Academy videos are an excellent resource for re-teaching. Go to <u>www.khanacademy.org</u>, type in the phrase provided, and it will take you to a video(s) about the topic. Khan Academy also provides further practice on the topics that you can do for your own self-assessment.

Your Responsibility is to:

- Complete all problems and show all necessary work clearly and carefully
- Turn in the packet on <u>THE FIRST DAY OF SCHOOL</u>! It will be collected and checked for completion on the first day of school.

You will be tested on the material within the first two weeks of school.

Have a great summer!

Algebra 2 (entering Pre-Calculus Level 2) Name_____ ID: 1 © 2 0 2 1 Kuta Software L L C. All rights reserved. Summer Packet Date Period

Simplify. Your answer should contain only positive exponents. (Khan Academy Topic: simplifying expressions with exponents)

1)
$$3u^{-3}v^4 \cdot 3u^{-1}v^0$$
 2) $3x^0 \cdot 4y^2$

3)
$$3a^{-2}b^{-3} \cdot 2a^{3}b^{3}$$

4) $4xy^{3} \cdot x^{-2} \cdot 2x^{3}y^{4}$

Find each product. (Khan Academy Topic: Multiplying Binomials)

5)
$$(-5r-2)(-4r+2)$$
 6) $(-2n+1)(4n+1)$

7) $(5v-6)^2$

Simplify each difference. (Khan Academy Topic: Polynomial basics)

8) $(2b^4 + 8b^2 + 8b^3) - (3b^4 + 7b^2 - 5)$ 9) $(2p^3 + 2 + 7p) - (p - 5p^3 + 1)$

Solve each equation by factoring. (Khan Academy Topic: Solving a quadratic by factoring)

10)
$$a^2 - 6a = 7$$
 11) $k^2 + k - 20 = 0$

Factor each completely. (Khan Academy Topic: Factoring quadratics)

12) $2n^2 - 200$

1.0

Simplify each expression. (Khan Academy Topic: "Adding and Subtracting Rational expressions" AND "Multiplying and Dividing Rational Expressions)

13)
$$\frac{2}{6} - \frac{r+1}{5r-5}$$
 14) $\frac{6k}{3} - \frac{k+5}{3k+4}$

15)
$$\frac{2}{v-3} + \frac{6v}{3v+3}$$
 16) $\frac{p^2 - p - 72}{8} \cdot \frac{8}{p^2 + 14p + 48}$

17)
$$\frac{a-1}{a^2+16a+60} \div \frac{a+8}{a^2+16a+60}$$
 18) $\frac{b-2}{-b^2+8b-12} \div \frac{2}{7b-42}$

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Simplify. (Khan Academy Topic: "Simplifying Radical Expressions")

19)
$$\frac{\sqrt{5x^3y}}{\sqrt{2x^4y^4}}$$
 20) $\frac{\sqrt{8x}}{\sqrt{10x}}$

21)
$$(7-6i) - (3-6i)$$
 22) $(5+i)^2$

Solve each equation with the quadratic formula.(Khan Academy Topic: "How to Use the Quadratic Formula")

23) $3n^2 = -4n + 16$ 24) $12x^2 + 8 = -12x$

Evaluate each expression. (Khan Academy Topic: "Logarithms")

25) log₃ 27

Condense each expression to a single logarithm. (Khan Academy Topic: "Operations with Logarithms")

26) $3\log_6 u + 12\log_6 v$

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Solve each equation. Remember to check for extraneous solutions.(Khan Academy Topic: "Equations with Square Roots and Cube Roots")

27)
$$\sqrt{2r+2} = \sqrt{3r-2}$$

Solve each inequality and graph its solution.(Khan Academy Topic: "Graphing Inequalities 1 and 2")

Solve each equation.(Khan Academy Topic: "Solving Absolute Value Equations")

 $29) \left| \frac{x}{9} \right| = 3$

Perform the indicated operation.(Khan Academy Topic: "Introduction to Function Composition")

30) f(n) = 3n - 1 $g(n) = -3n^{2} - n$ Find $(f \circ g)(n)$

Find the inverse of each function.(Khan Academy Topic: "Inverse Functions")

31) $g(n) = \frac{3}{5}n - \frac{9}{5}$

Sketch the graph of each function. (Khan Academy Topic: "Quadratics and shifts")



Solve each equation. Remember to check for extraneous solutions. Show your work.

34)	1 1 1		25) 1		1	2
	$\frac{1}{5p^2} = \frac{1}{p^2}$	$+\frac{1}{5p}$	$\frac{33}{m^2-2m}$	n	m-2	m^2-2m

36)
$$\frac{x-3}{2x} = \frac{x^2 - 8x + 16}{2x^2} + \frac{1}{x}$$
 37) $1 + \frac{1}{m-5} = \frac{6}{m^2 - 4m - 5}$