Flash Card Construction Instructions

*** THESE CARDS ARE FOR CALCULUS HONORS, AP CALCULUS AB AND AP CALCULUS BC. AP CALCULUS BC WILL HAVE ADDITIONAL CARDS FOR THE COURSE (IN A SEPARATE FILE).

The left column is the question and the right column is the answers. Cut out the flash cards and paste the question to one side of a note card and the answer to the other side. Be careful to paste the correct answer to its corresponding question!

COMMON FORMULAS/TRIGONOMETRY/GEOMETRY

Midpoint formula	$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$
Distance formula (between 2 points)	$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$
Quadratic Formula	$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
Pythagorean Theorem	$a^2+b^2=c^2$
$\sin\theta=$	$\frac{opp}{hyp}$ and $\frac{y}{r}$ and $\frac{1}{\csc\theta}$
$\cos\theta=$	$\frac{adj}{hyp}$ and $\frac{x}{r}$ and $\frac{1}{\sec\theta}$
$\tan\theta=$	$\frac{opp}{adj}$ and $\frac{y}{x}$ and $\frac{1}{\cot\theta}$

$\cot\theta =$	$\frac{adj}{opp}$ and $\frac{x}{y}$ and $\frac{1}{\tan\theta}$
$\csc\theta =$	$\frac{hyp}{opp}$ and $\frac{r}{y}$ and $\frac{1}{\sin\theta}$
$\sec\theta =$	$\frac{hyp}{adj}$ and $\frac{r}{x}$ and $\frac{1}{\cos\theta}$
Quotient Identity $\tan u$	$\frac{\sin u}{\cos u}$
Quotient Identity $\cot u$	$\frac{\cos u}{\sin u}$
Pythagorean Identities	$\sin^2 u + \cos^2 u = 1$ $1 + \tan^2 u = \sec^2 u$ $1 + \cot^2 u = \csc^2 u$
Area of a Circle/ Circumference of a circle	$A = \pi r^2$ $C = 2\pi r$
Area of a Parallelogram	$A = bh$

Area of a Trapezoid	$\frac{1}{2}h(b_1+b_2)$
Area of a Triangle	$\frac{1}{2}bh$
30-60-90 triangle	1) Hypotenuse is 2 time short leg 2) Long leg is $\sqrt{3}$ times short leg
45-45-90 triangle	1) Hypotenuse is $\sqrt{2}$ times leg 2) Two legs are equal
$\sin 0^\circ$	$\sin 0^\circ = 0$
$\sin 30^\circ$	$\sin 30^\circ = \frac{1}{2}$
$\sin 45^\circ$	$\sin 45^\circ = \frac{\sqrt{2}}{2}$
$\sin 60^\circ$	$\sin 60^\circ = \frac{\sqrt{3}}{2}$
$\sin 90^\circ$	$\sin 90^\circ = 1$

$\cos 0^\circ$	$\cos 0^\circ = 1$
$\cos 30^\circ$	$\cos 30^\circ = \frac{\sqrt{3}}{2}$
$\cos 45^\circ$	$\cos 45^\circ = \frac{\sqrt{2}}{2}$
$\cos 60^\circ$	$\cos 60^\circ = \frac{1}{2}$
$\cos 90^\circ$	$\cos 90^\circ = 0$
$\tan 0^\circ$	$\tan 0^\circ = 0$
$\tan 30^\circ$	$\tan 30^\circ = \frac{\sqrt{3}}{3}$
$\tan 45^\circ$	$\tan 45^\circ = 1$
$\tan 60^\circ$	$\tan 60^\circ = \sqrt{3}$
$\tan 90^\circ$	Undefined

$\sin(\alpha+\beta)=$	$\sin(\alpha+\beta)=\sin\alpha\cos\beta+\cos\alpha\sin\beta$
$\sin(\alpha-\beta)=$	$\sin(\alpha-\beta)=\sin\alpha\cos\beta-\cos\alpha\sin\beta$
$\cos(\alpha+\beta)=$	$\cos(\alpha+\beta)=\cos\alpha\cos\beta-\sin\alpha\sin\beta$
$\cos(\alpha-\beta)=$	$\cos(\alpha-\beta)=\cos\alpha\cos\beta+\sin\alpha\sin\beta$
$\sin 2\theta=$	$2\sin\theta\cos\theta$
$\cos 2\theta=$	$\cos^2\theta-\sin^2\theta$ $2\cos^2-1$ $1-2\sin^2\theta$
Law of sines	$\frac{\sin A}{a}=\frac{\sin B}{b}=\frac{\sin C}{c}$ or $\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$
Law of cosines	$a^2=b^2+c^2-2bc\cos\angle A$ $b^2=a^2+c^2-2ac\cos\angle B$ $c^2=a^2+b^2-2ab\cos\angle C$
Heron's Formula	$\sqrt{s(s-a)(s-b)(s-c)}$ $s=\frac{a+b+c}{2}$

What is a "solution point". P.1	*(x,y)* pair that makes an equations with an *x* and *y* true
How to find *x* and *y* intercepts of an equation. P.1	*x*-intercept set *y=0* and solve for *x* *y*-intercept set *x=0* and solve for *y*
What are the three types of symmetry? P.1	***y*-axis** (replacing *x* with –*x* yielding original equation) ***x*-axis** (replacing *y* with –*y* yielding original equation) **origin** (replacing *x* with –*x* and *y* with –*y* yielding original equations
What are the 3 tests for symmetry? P.1	*y*-axis *x*-axis origin
How to find the points of intersections of two equations? P.1	Simultaneously solving equations (elimination, substitution or using intersect feature of calculator
The formula for finding the slope between two points? P.2	$\frac{y_2 - y_1}{x_2 - x_1}$
What are the 4 types of slope? P.2	positive, negative, zero, undefined

What is the point slope form of the equation of a line? P.2	$y - y_1 = m(x - x_1)$
What are the relationships of slopes between parallel lines and perpendicular lines. P.2	parallel lines (same slope), perpendicular lines (negative reciprocal slopes)
How do you calculate an average rate of change? P.2	$\frac{f(b) - f(a)}{b - a}$
What is the slope-intercept equation of a line? P.2	$y = mx + b$
What is the relationship between a relation and a function? P.3	Function has each *x* pointing to only one *y* value
What does “one-to-one” mean? P.3	each *y* value is pointed to by only one *x*-value
What does “onto” mean? P.3	range consists of all of *Y*

How do you prove a graph is a function? P.3	passes the Vertical Line Test
What are the 3 categories of elementary functions? P.3	a. algebraic (polynomial, radical, rational) b. trigonometric c. exponential and logarithmic
What is the leading coefficient test for polynomials? P.3	a. even exponent of leading coefficient i. leading coefficient > 0 up/up ii. leading coefficient < 0 down/down b. odd exponent of leading coefficient iii. leading coefficient > 0 down left/up right iv. leading coefficient < 0 up left/down right
What is an "odd" function? P.3	(symmetric about origin)
What is an even function? P.3	(*y*-axis symmetry)
What is the relationship of the domain and range in inverse functions? P.4	The domains and ranges are swapped
How can you determine if a function has an inverse? P.4	Original function will pass the Horizontal Line Test
How can you visually determine of two functions are inverses of each other? P.4	The two functions will be reflected about the line y = x

What are the domains and ranges of arcsin? P.4	Domain: $-1 \leq x \leq 1$ Range $\frac{-\pi}{2} \leq y \leq \frac{\pi}{2}$
What are the domains and ranges of arccos? P.4	Domain: $-1 \leq x \leq 1$ Range $0 \leq y \leq \pi$
What are the domains and ranges of arctan? P.4	Domain: $-\infty < x < \infty$ Range $\frac{-\pi}{2} < y < \frac{\pi}{2}$
a^0 P.5	1
$a^x a^y$ P.5	a^{x+y}
$(a^x)^y$ P.5	a^{xy}
$(ab)^x$ P.5	$a^x b^x$
$\frac{a^x}{a^y}$ P.5	a^{x-y}
$(\frac{a}{b})^x$ P.5	$\frac{a^x}{b^x}$
a^{-x} P.5	$\frac{1}{a^x}$

lne^x P.5	x
e^{lnx} P.5	x
What are the domains and ranges of lnx? P.5	Domain:$(0, \infty)$ Range $(-\infty, \infty)$
What are the domains and ranges of e^x? P.5	Domain:$(-\infty, \infty)$ Range $0, \infty)$

What is the formula for finding a secant line? 1.1	$M_{\text{sec}} = \frac{f(x+\Delta x) - f(x)}{\Delta x}$
What is the concept of a limit? 1.1	If *f(x)* becomes arbitrarily close to a single number *L* as *x* approaches *c* from either side the limit of *f(x)*, as *x* approaches *c*, is *L*
What is a generic definition of a tangent line? 1.1	A line that touches curve at one point
What are the 3 conditions that need to be met for a limit to exist? 1.2	a. $\lim_{x \to a^+} f(x)$ exists b. $\lim_{x \to a^-} f(x)$ exists c. $\lim_{x \to a^+} f(x) = \lim_{x \to a^-} f(x)$
What are the 3 conditions where a limit fails to exist? 1.2	a. unbounded behavior (vertical asymptote) b. limit from the left not equal to the limit from the right c. oscillating behavior
What is "well-behaved" function? 1.3	$\lim_{x \to c} f(x) = f(c)$
What are the 3 basic types of algebraic functions? 1.3	a. polynomial b. rational c. radical
What are techniques for finding limits? 1.3	a. direct substitution (plug n chug) b. dividing out (factoring) c. rationalizing the numerator d. make a table/graph

What are the indeterminate forms of a function? 1.3	$\frac{0}{0} or \frac{\infty}{\infty}$
$\lim_{x\to 0}\frac{\sin x}{x}$ 1.3	1
$\lim_{x\to 0}\frac{1-\cos x}{x}$ 1.3	0
$\lim_{x\to 0}(1+x)^{\frac{1}{x}}$ 1.3	e
What are the 3 conditions that need to be met for continuity? 1.4	a. $f(a)$ defined b. $\lim_{x\to a} f(x)$ exists c. $f(a) = \lim_{x\to a} f(x)$
What is the concept of a "continuous" function? 1.4	when a graph can be drawn without lifting the pencil
What is the concept of "everywhere continuous"? 1.4	continuous over the entire number line
What are 3 types of discontinuity? 1.4	a. hole b. infinite (vertical asymptote) c. jump
What is the concept of a "one-sided" limit? 1.4	when only the limit from the left or the limit from the right of $x=c$ is defined.

What are 5 types of functions that are continuous at every point in their domain? 1.4	a. polynomial functions b. rational functions c. radical functions d. trigonometric functions e. exponential and logarithmic
What does the Intermediate Value Theorem state? 1.4	If *f* is continuous on the closed interval *[a,b]* and *k* is any number between *f(a)* and *f(b),* then there exists at least one number *c* in *[a,b]* such that *f(c) =k*
What is a vertical asymptote? 1.5	Vertical line that is approached but never touched (end behavior) and is a result of the denominator of a rational expression being undefined
How can you determine the difference between when a hole exists and a vertical asymptote exists? 1.5	If you can cancel a factor out of denominator it is a hole
What is a horizontal asymptote? 1.6	Horizontal line that is approached but never touched (end behavior) and is a result of the denominator growing faster than the numerator
$\lim_{x\to\infty} \frac{c}{x^r}$ 1.6	0
$\lim_{x\to-\infty} \frac{c}{x^r}$ 1.6	0
$\lim_{x\to-\infty} e^x$ 1.6	0
$\lim_{x\to\infty} e^{-x}$ 1.6	0

$\frac{\sqrt{x^2}}{x}\ x > 0$ 1.6	1 (sneaky technique)
$\frac{\sqrt{x^2}}{-x}\ x < 0$ 1.6	1 (sneaky technique)
What are the 3 tests for determining horizontal asymptotes? 1.6	num exponent > den exponent, no asymptote num exponent < den exponent, y=0 num exponent = den exponent, y= $\frac{leadingcoefficient}{leadingcoefficient}$

What is the definition of the derivative of a function using limits? 2.1	$f'(x) = \lim_{\Delta x \to 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$
What is an <u>alternate</u> form of the derivative function using limits? 2.1	$f'(c) = \lim_{x \to c} \frac{f(x) - f(c)}{x - c}$
What is the difference quotient? 2.1	$\frac{f(x+\Delta x) - f(x)}{\Delta x}$
What are the 3 cases where a derivative fails to exist? 2.1	a. any point of discontinuity b. cusp c. vertical tangent line
Differentiation Rules: Constant Rule 2.2	$\frac{d}{dx}[c] = 0$
Differentiation Rules: Simple Power Rule 2.2	$\frac{d}{dx}[x^n] = nx^{n-1}$
Differentiation Rules: Constant Multiple Rule 2.2	$\frac{d}{dx}[cf(x)] = cf'(x)$
Differentiation Rules: Sum and Difference Rules 2.2	$\frac{d}{dx}[f(x) \pm g(x)] = f'(x) \pm g'(x)$
$\frac{d}{dx}[\sin x]$ 2.2	$\cos x$

$\frac{d}{dx}[\cos x] =$ 2.2	$-\sin x$
$\frac{d}{dx}[e^x]$ 2.2	e^x
What is the standard position function? 2.2	$s(t) = -16t^2 + V_0 t + S_0$ -4.9 can be substituted if calculating in meters instead of feet
$\frac{d}{dx}[\tan x] =$ 2.3	$\sec^2 x$
$\frac{d}{dx}[\csc x] =$ 2.3	$-\csc x \cot x$
$\frac{d}{dx}[\sec x] =$ 2.3	$\sec x \tan x$
$\frac{d}{dx}[\cot x] =$ 2.3	$-\csc^2 x$
Differentiation Rules: Product Rule 2.3	$f(x)g'(x) + g(x)f'(x)$ first d second + second d first

Differentiation Rules: Quotient Rule 2.3	$\frac{g(x)f'(x)-f(x)g'(x)}{g(x)^2}$ bottom d top – top d bottom over bottom squared
Differentiation Rules: Chain Rule 2.4	$f'(g(x))g'(x)$ d outer d inner (don't touch the stuff)
Differentiation Rules: General Power Rule 2.4	$nu^{n-1}u'$
$\frac{d}{dx}[\sin u]=$ 2.4	$(\cos u)u'$
$\frac{d}{dx}[\cos u]=$ 2.4	$(-\sin u)u'$
$\frac{d}{dx}[\tan u]=$ 2.4	$(\sec^2 u)u'$
$\frac{d}{dx}[\cot u]=$ 2.4	$-(\csc^2 u)u'$
$\frac{d}{dx}[\sec u]=$ 2.4	$(\sec u\tan u)u'$

$\frac{d}{dx}[\csc u] =$ 2.4	$-(\csc u \cot u)u'$
$\frac{d}{dx}[\ln x]$ 2.4	$\frac{1}{x}$, $x > 0$
$\frac{d}{dx}[\ln\|u\|]$ 2.4	$\frac{u'}{u}$
$\log_a x$ 2.4	$\frac{1}{lna} lnx \; or \; \frac{lnx}{lna}$
$\frac{d}{dx}[a^x]$ 2.4	$(lna)a^x$
$\frac{d}{dx}[a^u]$ 2.4	$(lna)a^u \frac{du}{dx}$
$\frac{d}{dx}[\log_a x]$ 2.4	$\frac{1}{(lna)x}$

$\frac{d}{dx}[\log_a u]$ 2.4	$\frac{1}{(lna)u}\frac{du}{dx}$ or $\frac{u'}{(lna)u}$
$\frac{d}{dx}[e^u]$ 2.4	$e^u u'$
What is the explicit form of an equation? 2.5	when an equation is solved for one variable
Inverse functions have what types of slopes at inverse pairs of points? 2.6	reciprocal slopes
$\frac{d}{dx}[\arcsin u] =$ 2.6	$\frac{u'}{\sqrt{1-u^2}}$
$\frac{d}{dx}[\arccos u] =$ 2.6	$\frac{-u'}{\sqrt{1-u^2}}$
$\frac{d}{dx}[\arctan u] =$ 2.6	$\frac{u'}{1+u^2}$
$\frac{d}{dx}[\operatorname{arc\,cot} u] =$ 2.6	$\frac{-u'}{1+u^2}$
$\frac{d}{dx}[\operatorname{arc\,sec} u] =$ 2.6	$\frac{u'}{\lvert u\rvert\sqrt{u^2-1}}$

$\frac{d}{dx}[\operatorname{arc}\csc u] =$ 2.6	$\frac{-u'}{\lvert u\rvert\sqrt{u^2-1}}$
What is a related rate derivative usually taken with respect to? 2.7	time
What is the formula for the volume of a cone? 2.7	$V = \frac{\pi}{3}r^2h$
What is the formula for the volume of a sphere? 2.7	$V = \frac{4}{3}\pi r^3$
What is a another name for a tangent line of approximation called? 2.8	linear approximation
What method uses a tangent line to approximate the y-values of a function? 2.8	Newton's method

What is a "maximum"? 3.1	*f(c)* > all *f(x)* on an interval
What is a "minimum"? 3.1	*f(c)* < all *f(x)* on an interval
What is the difference between critical numbers and critical points? 3.1	critical numbers are *x*-values and critical points are (*x,y*). Critical numbers are found when $f'(c) = 0$ or where $f'(c)$ does not exist.
What theorem state if *f* is continuous on a closed interval [a,b], then *f* has both a minimum and a maximum on the interval 3.1	Extreme Value Theorem
Where does the derivative fail to identify possible extrema? 3.1	endpoints
What does Rolle's Theorem state? 3.2	if *f(a) = f(b)* then there exists at least one number *c* in *(a,b)* such that $f'(c) = 0$
What does the Mean Value Theorem state? 3.2	$f'(c) = \frac{f(b) - f(a)}{b - a}$
What are two major similarities between Rolle's Theorem and the Mean Value Theorem? 3.2	Function must be 1) continuous and 2) differentiable
What is meant by "increasing" in terms of a derivative? 3.3	$f'(x) > 0$ for all *x* in *(a,b)*

What is meant by "decreasing" in terms of a derivative? 3.3	$f'(x) < 0$ for all *x* in *(a,b)*
What is meant by "constant" in terms of a derivative? 3.3	$f'(x) = 0$ for all *x* in *(a,b)*
What does "strictly monotonic" mean"? 3.3	When a function is either increasing or decreasing on entire interval
What does the first derivative test state? 3.3	a. if $f'(x)$ changes from increasing to decreasing at *x =c* then $f'(c)$ is a relative maximum b. if $f'(x)$ changes from decreasing to increasing at x =c then $f'(c)$ is a relative minimum c. if $f'(x)$ does not change signs at *x =c* then $f'(c)$ is a neither a relative maximum or relative minimum
How do you use the second derivative to determine concavity? 3.4	a. if $f''(x) > 0$, for all x in an interval f is concave upward b. if $f''(x) < 0$, for all x in an interval f is concave downward
What are "points of inflection"? 3.4	where $f''(c) = 0$ or $f''(c)$ is undefined (where a graph goes from concave upward to concave downward or vice versa

How do you use the second derivative to determine relative extrema using critical numbers? 3.4	a. if $f''(c) > 0$,then *f(c)* is a relative minimum b. if $f''(c) < 0$,then *f(c)* is a relative maximum c. if $f''(c) = 0$ then use must use the First Derivative Test
In optimization problems what is the equation that is to be optimized called? 3.6	primary equation
What is a differential equation? 3.7	an equation that contains a derivative
What is the equation for a tangent line of approximation (linear approximation)? 3.7	$y = f(c) + f'(c)(x - c)$

$\int 0dx$ 4.1	C
$\int du =$ 4.1	$u + C$
$\int kf(x)dx$ 4.1	$k\int f(x)dx$
$\int [f(x) \pm g(x)]dx$ 4.1	$\int f(x)dx \pm \int g(x)dx$
$\int x^n dx =$ 4.1	$\frac{x^{n+1}}{n+1} + C$
$\int \cos x\, dx =$ 4.1	$\sin x + C$
$\int \sin x\, dx =$ 4.1	$-\cos x + C$
$\int (\sec^2 x)dx$ 4.1	$\tan x + C$
$\int \sec x \tan x\, dx$ 4.1	$\sec x + C$

$\int(\csc^2 x)dx =$ 4.1	$-\cot x + C$
$\int \csc x \cot x \, dx$ 4.1	$-\csc x + C$
$\int e^x dx$ 4.1	$e^x + C$
$\int a^x dx$ 4.1	$(\frac{1}{lna})a^x + C$
$\int \frac{1}{x} dx$ 4.1	$\ln \lvert x \rvert + C$
To change a general solution into a particular solution what is needed? 4.1	an initial condition
$\sum_{i=1}^{n} a_i$ is what type of notation? 4.2	sigma notation
$\sum_{i \to 1}^{n} c$ 4.2	cn
$\sum_{i \to 1}^{n} i$ 4.2	$\frac{n(n+1)}{2}$

$\sum_{i\to 1}^{n} i^2$ 4.2	$\frac{n(n+1)(2n+1)}{6}$
$\sum_{i\to 1}^{n} i^3$ 4.2	$\frac{n^2(n+1)^2}{4}$
Left Rectangle Rule 4.2	$\frac{b-a}{n}(f(x_{0)} + \cdots f(x_{n-1}))$
Right Rectangle Rule 4.2	$\frac{b-a}{n}(f(x_{1)} + \cdots f(x_n))$
The definite integral as the area of a region 4.3	$\int_a^b f(x)dx$
$\int_a^a f(x)dx$ 4.3	0
$\int_b^a f(x)dx$ 4.3	$-\int_a^b f(x)dx$
$\int_a^b f(x)dx$ with point c between a and b 4.3	$\int_a^c f(x)dx + \int_c^b f(x)dx$

$\int_a^b kf(x)dx)$ 4.3	$k\int_a^b f(x)dx$
$\int_a^b [f(x) \pm g(x)]dx$ 4.3	$\int_a^b f(x)dx \pm \int_a^b g(x)dx$
Trapezoidal Rule 4.3	$\frac{b-a}{2n}[f(x_0) + 2f(x_1) + \cdots 2f(x_{n-1)} + f(x_{n)}]$
Fundamental Theorem of Calculus 4.4	$\int_a^b f(x)dx = F(b) - F(a)$
Mean Value Theorem For Integrals 4.4	$\int_a^b f(x)dx = f(c)(b-a)$
Average value of a function 4.4	$\frac{1}{b-a}\int_a^b f(x)dx$
Second Fundamental Theorem of Calculus 4.4	$\frac{d}{dx}[\int_a^x f(t)dt] = f(x)$
Net Change Theorem 4.4	$\int_a^b F'(x) = F(b) - F(a)$

$\int u^n \, du =$ 4.5	$\frac{u^{n+1}}{n+1} + C$
$\int kf(x)dx$ 4.5	$k \int f(x)dx$
$\int_{-a}^{a} f(x)dx$ (even function) 4.5	$2\int_{0}^{a} f(x)dx$
$\int_{-a}^{a} f(x)dx$ (odd function) 4.5	0
$\int \frac{du}{u} =$ 4.6	$\ln\lvert u\rvert + C$
$\int a^u \, du =$ 4.6	$\left(\frac{1}{\ln a}\right) a^u + C$
$\int \sin u \, du =$ 4.6	$-\cos u + C$
$\int \cos u \, du =$ 4.6	$\sin u + C$
$\int \tan u \, du =$ 4.6	$-\ln\lvert\cos u\rvert + C$

$\int \cot u \, du =$ 4.6	$\ln \lvert \sin u \rvert + C$
$\int \sec u \, du =$ 4.6	$\ln \lvert \sec u + \tan u \rvert + C$
$\int \csc u =$ 4.6	$-\ln \lvert \csc u + \cot u \rvert + C$
$\int \sec^2 u \, du =$ 4.6	$\tan u + C$
$\int \csc^2 u \, du =$ 4.6	$-\cot u + C$
$\int \sec u \tan u \, du =$ 4.6	$\sec u + C$
$\int \csc u \cot u \, du =$ 4.6	$-\csc u + C$
$\int \frac{du}{a^2 + u^2} =$ 4.7	$\frac{1}{a} \arctan \frac{u}{a} + C$

$\int \frac{du}{\sqrt{a^2 - u^2}} =$ 4.7	$\arcsin \frac{u}{a} + C$
$\int \frac{du}{u\sqrt{u^2 - a^2}} =$ 4.7	$\frac{1}{a} arc\sec \frac{\lvert u \rvert}{a} + C$

What is a differential equation? 5.1	an equation that includes a derivative
What is Euler's Method? 5.1	a numerical approach to approximating the particular solution to a differential equation
What is the solution to a exponential growth or decay problem? 5.2	$y = Ce^{kt}$
What is k in a half-life problem? 5.2	$\frac{\ln(\frac{1}{2})}{t} = k$
What is the process of collecting all terms with x's and y's on opposite sides of the equal sign called? 5.2	separation of variables

How do you find the area between two curves? 6.1	$\int_a^b [f(x) - g(x)]\,dx$
Disk Method Horizontal Axis of Revolution 6.2	$\pi \int_a^b [R(x)]^2\,dx$
Disk Method Vertical Axis of Revolution 6.2	$\pi \int_c^d [R(y)]^2\,dy$
Washer Method Horizontal Axis of Revolution 6.2	$\pi \int_a^b ([R(x)]^2 - [r(x)]^2)\,dx$
Washer Method Vertical Axis of Revolution 6.2	$\pi \int_c^d ([R(y)]^2 - [r(y)]^2)\,dy$
Volume of solid with known cross section perpendicular to x-axis 6.2	$\int_a^b A(x)\,dx$
Volume of solid with known cross section perpendicular to y-axis 6.2	$\int_c^d A(y)\,dy$