Calculus
Log Formulas

roperties of Logarithms

$\log_a 1 = 0$

$\log_a a = 1$

$\log_a a^x = x$

$a^{\log_a x} = x$

If $\log_a x = \log_a y$, *then* $x = y$

Properties of Natural Logarithms

$\ln 1 = 0$

$\ln e = 1$

$\ln e^x = x$

$e^{\ln x} = x$

If $\ln x = \ln y$, *then* $x = y$

Change of Base Formula

To base 10: $\log_a x = \dfrac{\log_{10} x}{\log_{10} a}$

To base e: $\log_a x = \dfrac{\ln x}{\ln a}$

Other Properties of Logs

$\log_a(uv) = \log_a u + \log_a v$

$\log_a(\frac{u}{v}) = \log_a u - \log_a v$

$\log_a u^n = n\log_a u$

Linear function Review:

Standard Form: Ax + By = C

slope = $-\dfrac{A}{B}$

y-int (b) = $\dfrac{C}{B}$

Slope-Intercept Form: y = mx + b

Point-Slope Form: $y - y_1 = m(x - x_1)$

Limit Review:

Limit to a number: plug in number, the limit is the result.

***If you get 0/0 then you must factor first, cancel and replug the number in.

Limit to Infinity:

higher power/lower power--> DNE

lower power/higher power--> = 0

equal powers--> ratio of the coefficients

Basic Transformations:

$y = f(x)$ ----------Original graph

$y = f(x - c)$ -----C units to the right

$y = f(x + c)$ -----C units to the left

$y = f(x) - c$ -----C units down

$y = f(x) + c$ -----C units up

$y = -f(x)$ -------Reflection about the x-axis

$y = f(-x)$ --------Reflection about the y-axis

$y = -f(-x)$ -------Reflection about the origin

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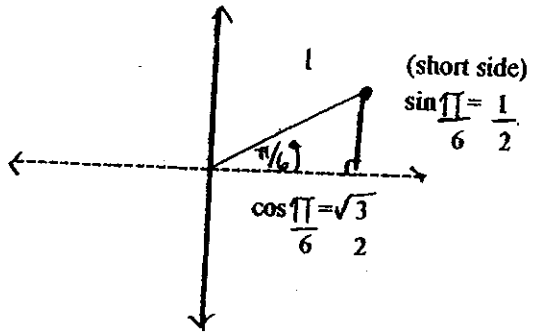
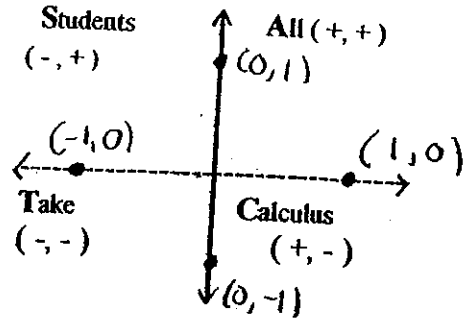
CALCULULS TRIG REVIEW SHEET

Name _____

UNIT CIRCLE (radius = 1)
(30 = ∏/6 , 60 = ∏/3, 90 = ∏/2, 180 = ∏)

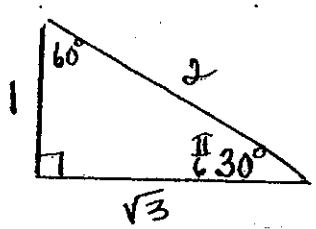
All Students Take Calculus

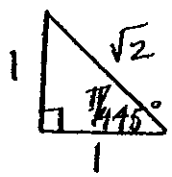




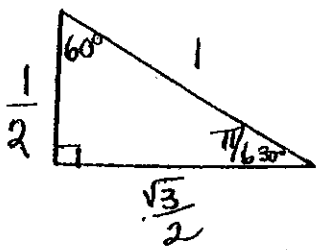
Remember cos = x, sin = y, tan = y/x

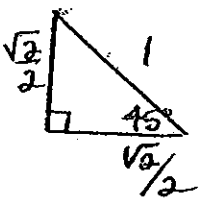
Special Triangles:





OR:





Remember SOH CAH TOA

Pattern for remembering sin & cos values:

θ	Sin θ	Cos θ
0°	$\frac{\sqrt{0}}{2} = 0$	$\frac{\sqrt{4}}{2} = 1$
30°	$\frac{\sqrt{1}}{2} = \frac{1}{2}$	$\frac{\sqrt{3}}{2}$
45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$
60°	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{1}}{2} = \frac{1}{2}$
90°	$\frac{\sqrt{4}}{2} = 1$	$\frac{\sqrt{0}}{2} = 0$
120°	$\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{1}}{2} = -\frac{1}{2}$
135°	$\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{2}}{2}$
150°	$\frac{\sqrt{1}}{2} = \frac{1}{2}$	$-\frac{\sqrt{3}}{2}$
180°	$\frac{\sqrt{0}}{2} = 0$	$-\frac{\sqrt{4}}{2} = -1$

Etc . . .

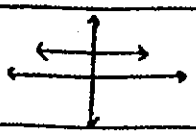
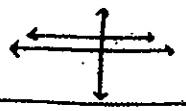
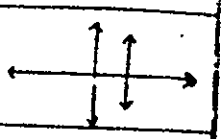
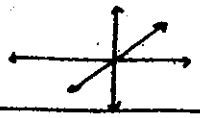
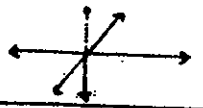
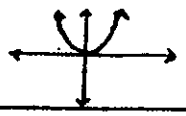
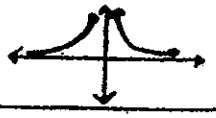
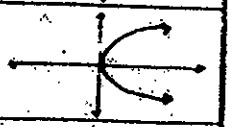
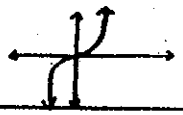
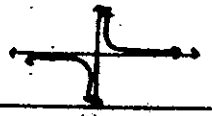
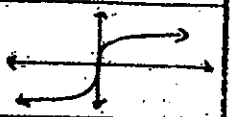
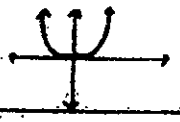
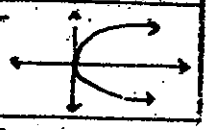
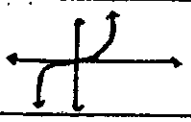
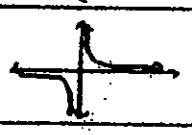
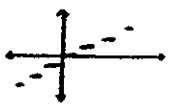
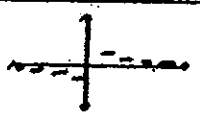
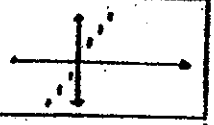
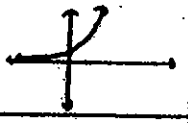
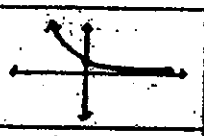
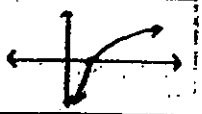
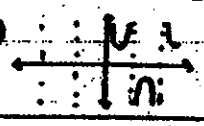
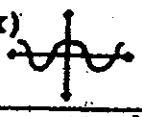
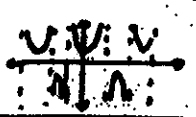
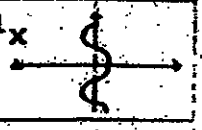
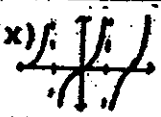
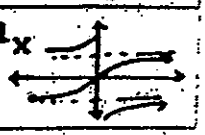
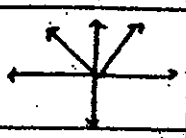
$\text{Cot } \theta = \frac{1}{\text{Tan } \theta}$

$\text{Csc } \theta = \frac{1}{\text{Sin } \theta}$

$\text{Sec } \theta = \frac{1}{\text{Cos } \theta}$

$\text{Tan } \theta = \frac{\text{Sin } \theta}{\text{Cos } \theta}$

CATALOG OF CURVES

FAMILY	REPRESENTATIVE FUNCTION	RECIPROCAL	INVERSE RELATION
Constant	$f(x) = a$ 	$y = 1/a$ 	$x = a$ 
Linear	$f(x) = x$ 	$y = 1/x$ 	$y = x$ 
Quadratic	$f(x) = x^2$ 	$y = 1/x^2$ 	$y = \pm\sqrt{x}$ 
Cubic	$f(x) = x^3$ 	$y = 1/x^3$ 	$y = \sqrt[3]{x}$ 
Power: n even	$f(x) = x^n$ 	$y = 1/x^n$ 	$y = \pm\sqrt[n]{x}$ 
Power: n odd	$f(x) = x^n$ 	$y = 1/x^n$ 	$y = \sqrt[n]{x}$ 
Greatest Integer	$f(x) = [x]$ 	$y = 1/[x]$ 	$[y] = x$ 
Exponential	$f(x) = e^x$ 	$y = e^{-x}$ 	$y = \ln x$ 
Sine	$f(x) = \sin(x)$ 	$y = \csc(x)$ 	$y = \sin^{-1}x$ 
Cosine	$f(x) = \cos(x)$ 	$y = \sec(x)$ 	$y = \cos^{-1}x$ 
Tangent	$f(x) = \tan(x)$ 	$y = \cot(x)$ 	$y = \tan^{-1}x$ 
Absolute Value	$f(x) = \lvert x\rvert$ 	$y = 1/\lvert x\rvert$ 	$\lvert y\rvert = x$