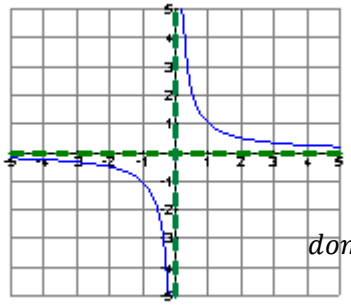
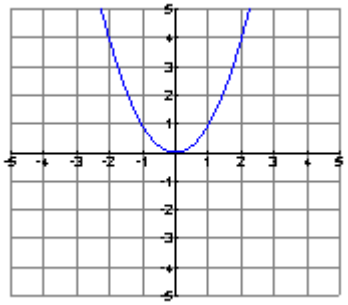
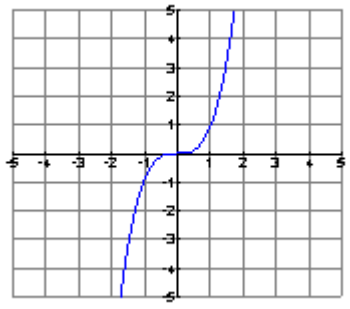
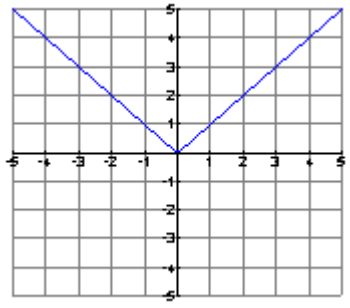
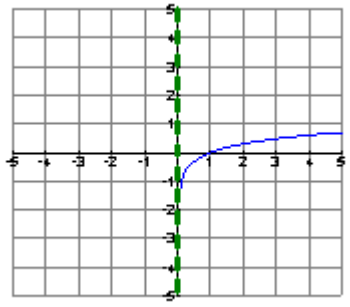
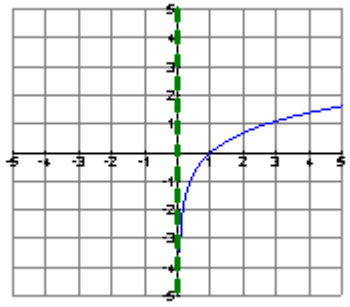
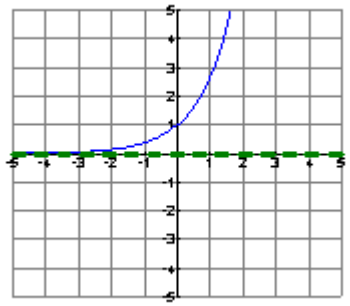
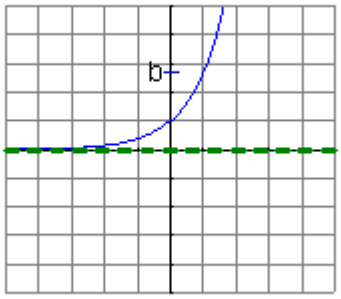
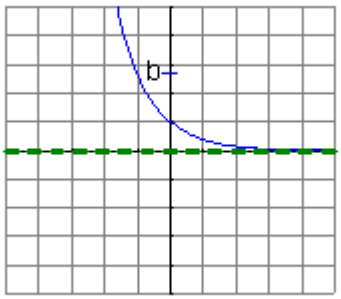
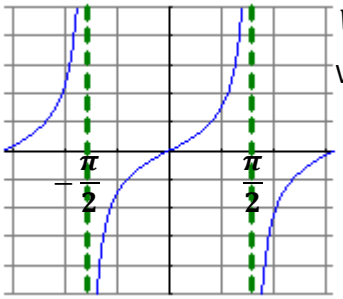
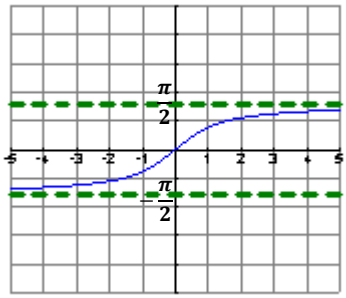
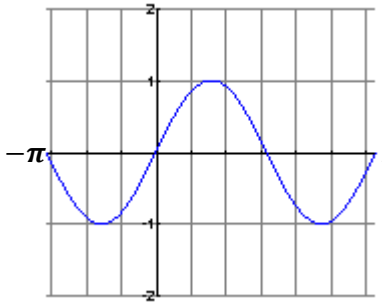
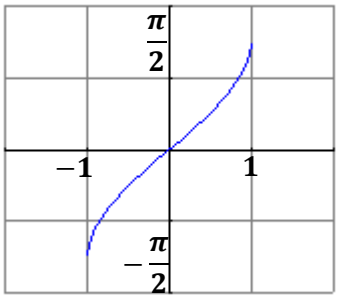
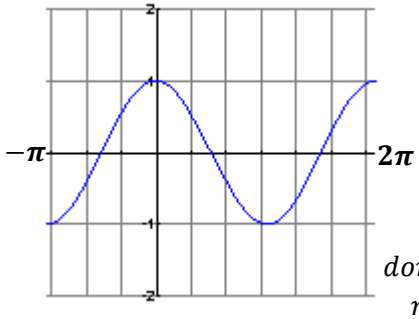
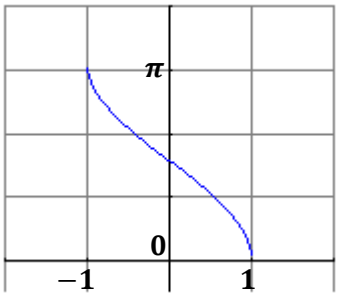
Notecards Pre-Calculus			
1	Unit Circle	$t = ud$ $t = \sqrt{3}$ $t = 1$ $t = \frac{\sqrt{3}}{3}$ $t = 0$	
2	Pythagorean Identities	1. $sin^2x + cos^2x = 1$ 2. $tan^2x + 1 = sec^2x$ 3. $cot^2x + 1 = csc^2x$	
3	Double Angle Formulas	1. $\sin(2\theta) = 2sin\theta cos\theta$ 2. $\cos(2\theta) = cos^2\theta - sin^2\theta$ $= 2cos^2\theta - 1$ $= 1 - 2sin^2\theta$	
4	Factoring a. Difference of Perfect Squares b. Sum & Difference of Perfect Cubes	Squares $a^2 - b^2 = (a - b)(a + b)$ Cubes $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$	
5	Factoring a. $x^2 \pm bx \pm c$ b. $ax^2 \pm bx \pm c$	$x^2 \pm bx + c$ $+c$ Multiply to get C add to get b $-c$ Multiply to get C subtract to get b $x^2 - x - 12$ $(x - 4)(x + 3)$ $(-4)(+3) = 12$ $-4 + 3 = -1$	$ax^2 \pm bx \pm c$ Multiply to get a and c Add or subtract to get b depending on the sign of c. Check the upside down rainbow. $6x^2 - 11x - 7$ $(2x + 1)(3x - 7)$ $(2)(3) = 6$ $(+1)(-7) = -7$ $(-14) + (+3) = -11$
6	Rules for Exponents a. $x^a \cdot x^b$ b. $\frac{x^a}{x^b}$ c. $(x^a)^b$ d. $(x^a)^0$	a. x^{a+b} b. x^{a-b} c. x^{ab} d. 1	

7	How do you find vertical asymptotes?	When you have a rational function $f(x) = \frac{p(x)}{q(x)}$ Then you set the $bottom = 0$ and solve for x. Or you set $q(x) = 0$ and solve for x.
8	How do you find horizontal asymptotes?	When you have a rational function $f(x) = \frac{p(x)}{q(x)}$ Then you compare the degree in the top to the degree in the bottom, If degree in top smaller than degree in the bottom Then HA: $y = 0$ (J-Lo) If degree in top is equal to the degree in the bottom Then HA: $y = leading\ coefficiants$ (Marilyn M) If degree in top larger than degree in the bottom Then HA: $none$ (Dolly P.)
9	What are the three forms of a line?	1. Slope Intercept: $y = mx + b$ $m = slope\ and\ b = y - intercept$ 2. Point Slope: $y - y_1 = m(x - x_1)$ $m = slope\ and\ point = (x_1, y_1)$ 3. Standard or General $ax + by = c$ No fractions x –term is always positve
10	Rules for logs a. $log(ab)$ b. $log\left(\frac{a}{b}\right)$ c. $log(a^b)$	a. $log(ab) = \log(a) + \log(b)$ b. $log\left(\frac{a}{b}\right) = \log(a) - \log(b)$ c. $log(a^b) = blog(a)$
11	Change of Base Formula $log_b x =$	$log_b x = \frac{logx}{logb}$
12	Graph of $f(x) = \frac{1}{x}$ Domain and Range	 $VA:\ x = 0$ $HA:\ y = 0$ $domain = (-\infty, 0)U(0, \infty)$ $range = (-\infty, 0)U(0, \infty)$
13	Graph of $f(x) = x^2$ Domain and Range	 $domain = (-\infty, \infty)$ $range = (0, \infty)$

14	Graph of $f(x) = x^3$ Domain and Range	 $domain = (-\infty, \infty)$ $range = (-\infty, \infty)$
15	Graph of $f(x) = \lvert x \rvert$ or $f(x) = \begin{cases} x & for\ x > 0 \\ -x & for\ x < 0 \end{cases}$ Domain and Range	 $domain = (-\infty, \infty)$ $range = (0, \infty)$
16	Graph of $f(x) = \log(x)$ Domain and Range	 $VA: x = 0$ Points on Graph: $(1,0)$ & $(10,1)$ $domain = (0, \infty)$ $range = (-\infty, \infty)$
17	Graph of $f(x) = \ln(x)$ Domain and Range	 $VA: x = 0$ Points on Graph: $(1,0)$ & $(e, 1)$ $domain = (0, \infty)$ $range = (-\infty, \infty)$
18	Graph of $f(x) = e^x$ Domain and Range	 $HA: y = 0$ Points on Graph: $(0,1)$ & $(1, e)$ $domain = (-\infty, \infty)$ $range = (0, \infty)$

19	Graph of $f(x) = b^x$ where b is a positive integer or positive improper fraction Domain and Range	 $HA: y = 0$ Points on Graph: $(0,1)$ & $(1,b)$ $domain = (-\infty, \infty)$ $range = (0, \infty)$
20	Graph of $f(x) = b^x$ where b is a proper fraction Domain and Range	 $HA: y = 0$ Points on Graph: $(0,1)$ & $(-1,b)$ $domain = (-\infty, \infty)$ $range = (0, \infty)$
21	Graph of $f(x) = \tan(x)$ Domain and Range	 $VA: x = -\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2} \ldots \frac{n\pi}{2}$ Where $n = integer$ $domain = All\ Reals$ $except\ VA's$ $range = (-\infty, \infty)$
22	Graph of $f(x) = \tan^{-1}(x)$ or $f(x) = arc\tan(x)$ Domain and Range	 $domain = (-\infty, \infty)$ $range = \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$
23	Graph of $f(x) = \sin(x)$ Domain and Range	 $domain = (-\infty, \infty)$ $range = (-1,1)$

24	Graph of $f(x) = \sin^{-1}(x)$ or $f(x) = arc\sin(x)$ Domain and Range	 $domain = (-1,1)$ $range = \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$
25	Graph of $f(x) = \cos(x)$ Domain and Range	 $domain = (-\infty, \infty)$ $range = (-1,1)$
26	Graph of $f(x) = \cos^{-1}(x)$ or $f(x) = arccos(x)$ Domain and Range	 $domain = (-1,1)$ $range = \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$