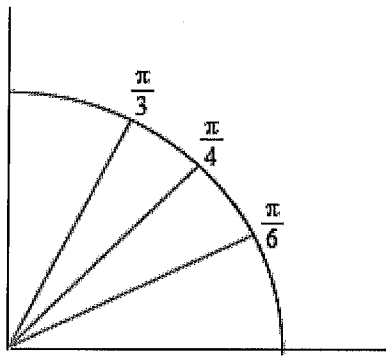
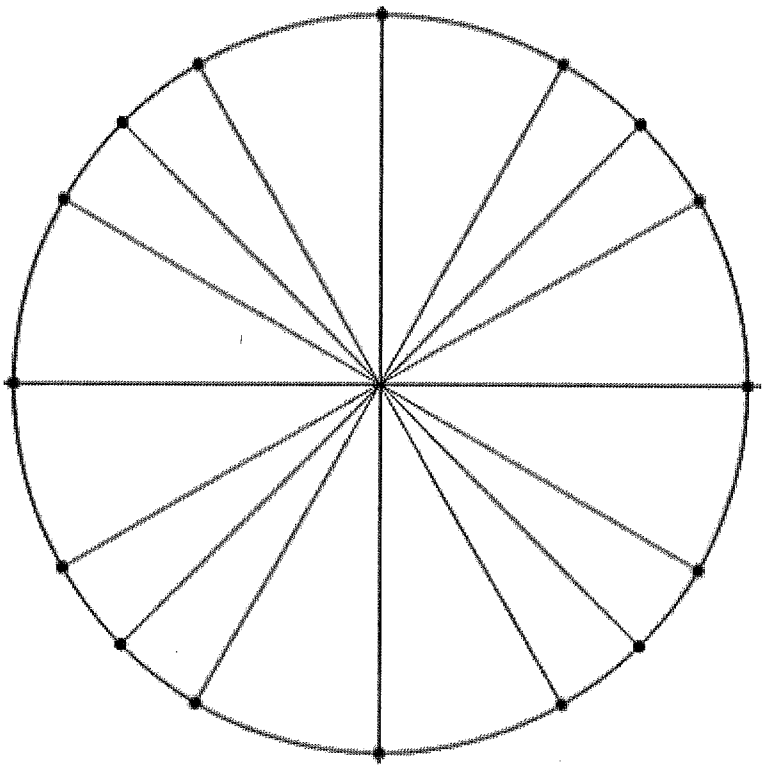
AB Calculus Ch. P Notes (Day 3) - Trig Review, Exponential Function Review, and Log Function Review

Trig Unit Circle Review

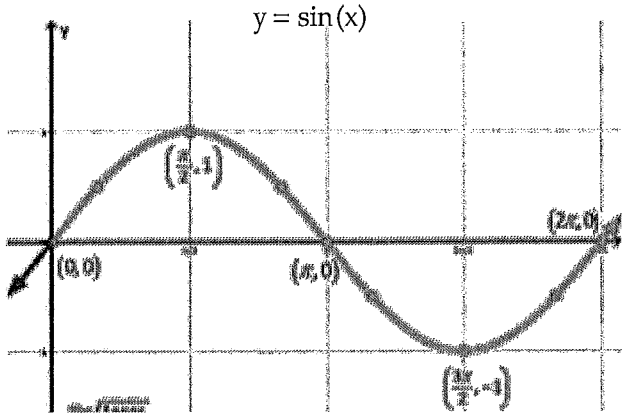
Quadrant I



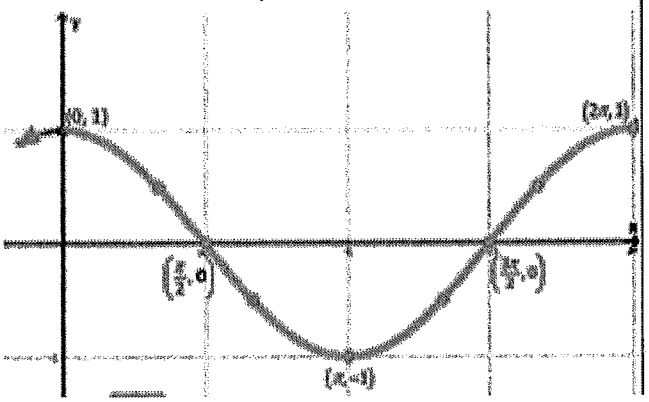


Need to know basic trig functions in RADIANS! We never use degrees. You can either use the Unit Circle or Special Triangles to find the following.		
31. $\sin\frac{\pi}{6}$	32. $\cos\frac{\pi}{4}$	33. $\sin 2\pi$
34. $\tan\pi$	35. $\sec\frac{\pi}{2}$	36. $\cos\frac{\pi}{6}$
37. $\sin\frac{\pi}{3}$	38. $\sin\frac{3\pi}{2}$	39. $\tan\frac{\pi}{4}$
40. $\csc\frac{\pi}{2}$	41. $\sin\pi$	42. $\cos\frac{\pi}{3}$
43. Find x where $0 \le x \le 2\pi$, $\sin x = \frac{1}{2}$	44. Find x where $0 \le x \le 2\pi$, $\tan x = 0$	45. Find x where $0 \le x \le 2\pi$, $\cos x = -1$

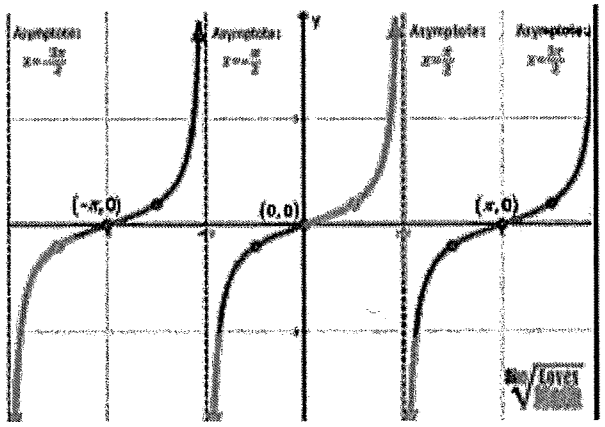
$y = \sin(x)$



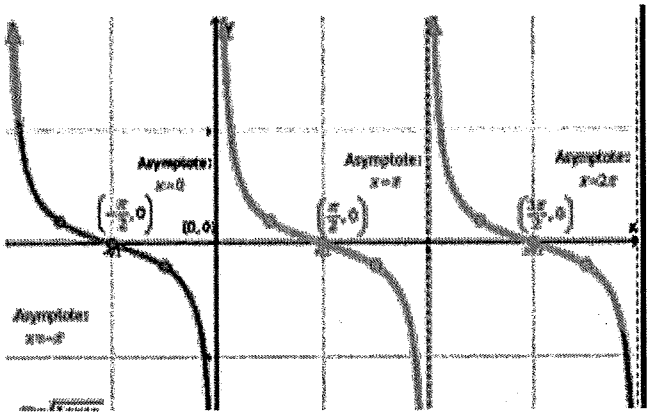
$y = \cos(x)$



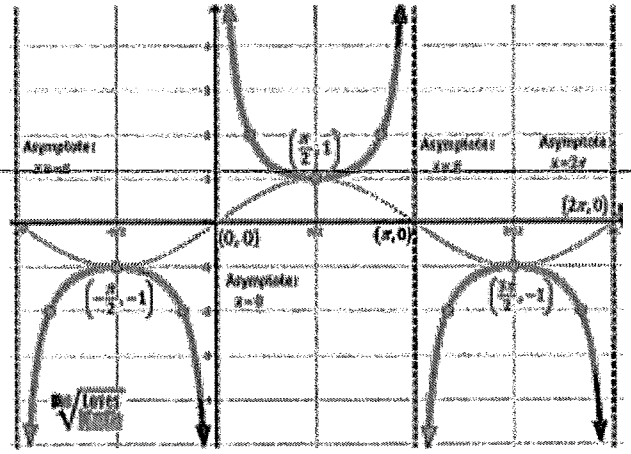
$y = \tan(x)$



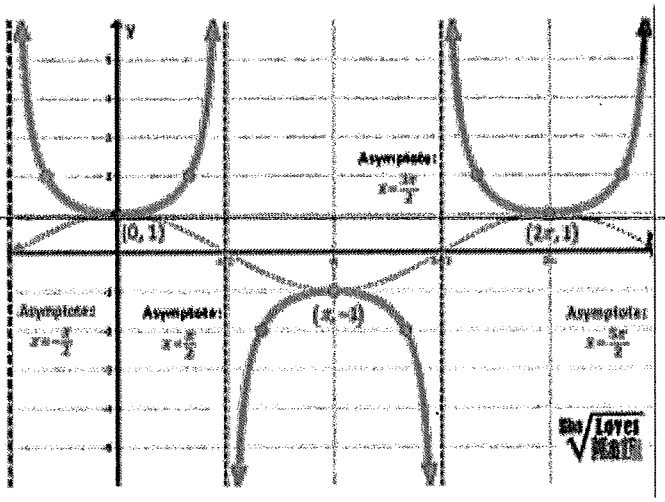
$y = \cot(x)$



$y = \csc(x)$



$y = \sec(x)$



Solve the following trig equations where $0 \leq x \leq 2\pi$.

55. $\sin x = \frac{1}{2}$	56. $\cos x = -1$	57. $\cos x = \frac{\sqrt{3}}{2}$
58. $2\sin x = -1$	59. $\cos x = \frac{\sqrt{2}}{2}$	60. $\cos\left(\frac{x}{2}\right) = \frac{\sqrt{3}}{2}$
61. $\tan x = 0$	62. $\sin(2x) = 1$	63. $\sin\left(\frac{x}{4}\right) = \frac{\sqrt{3}}{2}$

Solve the following equations. Remember $e^0 = 1$ and $\ln 1 = 0$.

46. $e^x + 1 = 2$	47. $3e^x + 5 = 8$	48. $e^{2x} = 1$
49. $\ln x = 0$	50. $3 - \ln x = 3$	51. $\ln(3x) = 0$

Review of Exponential and Log properties:

If $b^x = b^y$ *then* $x = y$	$\ln(ab) = \ln a + \ln b$	$\ln x = \log_e x$
$a^{m+n} = a^m * a^n$ $a^{m-n} = \frac{a^m}{a^n}$	$\ln\left(\frac{a}{b}\right) = \ln a - \ln b$	• $\ln 1 = 0$ • $\ln e = 1$ • $\ln 0$ = *does not exist* (vertical asymptote)
$(a^m)^n = a^{m*n}$	$\ln a^n = n * \ln a$	i) If $y = b^x$ *then* $\log_b y = x$ ii) If $\log_b y = x$ *then* $y = b^x$

Solve the following:

52. $x^2 - 3x = 0$	53. $e^x + xe^x = 0$	54. $e^{2x} - e^x = 0$

55) **Solve the following:**

a) $\log_{81}\sqrt{3} = x$

b) $\log_x 64^{\frac{1}{3}} = \frac{1}{2}$

c) $9 = 4 + \log_2(x+3)$

d) $\frac{1}{3}\ln x = \ln 8$

e) $\log_b 8 = \log_b x + \log_b(x-2)$

f) $4\ln(x+3) = 12$

g) $e^{3x} = 6$

h) $7^{(x-4)} = 100$