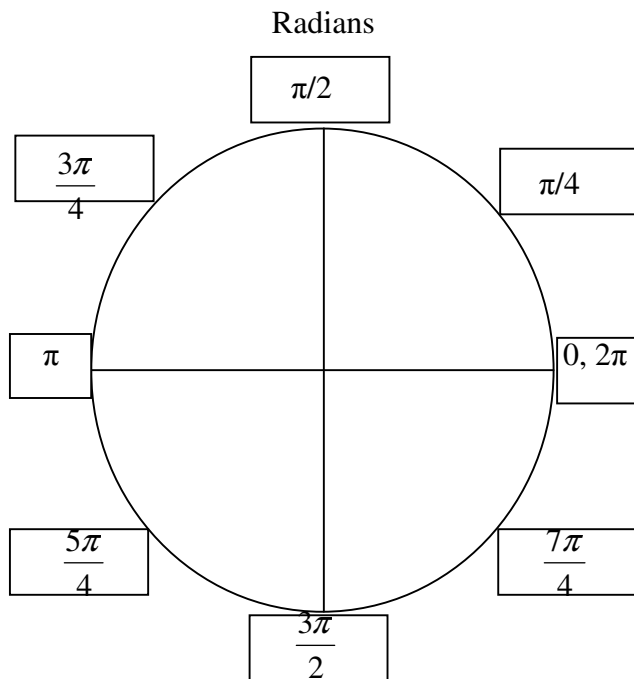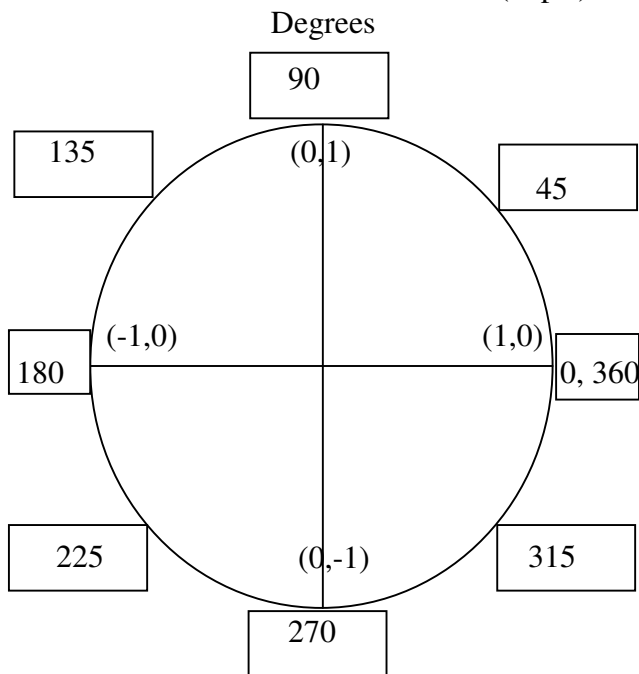**Sample Test 5.1-5.6 – THE TEST WILL BE SIMILAR BUT I WILL CHANGE SOME THINGS**

1. Fill in the boxes for the unit circles-(18pts) **THEY ARE FILLED IN ON THE SAMPLE TEST ONLY**

Degrees

| 90 |

| 135 | (0,1)

| 45 |

(-1,0)

| 180 | (1,0)

| 0, 360

| 225 | (0,-1) | 315 |

| 270 |

Radians

| π/2 |

| $\frac{3\pi}{4}$ |

| π/4 |

| π |

| 0, 2π |

| $\frac{5\pi}{4}$ | | $\frac{7\pi}{4}$ |

| $\frac{3\pi}{2}$ |

2. Evaluate $\sin\left(\frac{\pi}{2}\right)$ using the Unit Circle ____1__(3pts)

3. What angle is coterminal to 1600° __160°_(4pts)

4. What is the formula for converting between radians and degrees? _____$\frac{d}{360°} = \frac{r}{2\pi}$_____(2pt)
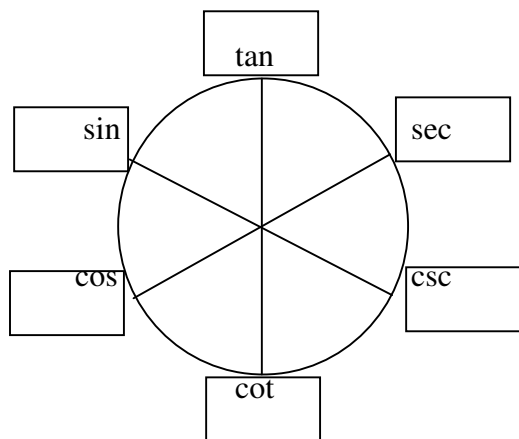
a) Convert 10° to radians __$\frac{\pi}{18}$__(4pts)

5. Use a calculator to evaluate: $3 - \cos^2\left(\frac{\pi}{4} + \frac{\pi}{2}\right)$ __2.5__(5pts)

6. What is the fundamental Theorem of Trigonometry? ___$\sin^2 x + \cos^2 x = 1$_____? (2pt)

a) If $\sin(x) = .5$ what is the $\cos(x)$? (3pts) _.8660_

7. Fill in the boxes on the wheel of identities : (6pts)

| tan |

| sin | | sec |

| cos | | csc |

| cot |

8. Use the wheel to fill in the identities: (12pts)

a)

$$\cot x = \frac{1}{\boxed{\tan x}}$$

d) $\sec x \sin x = \underline{\quad\boxed{\tan x}\quad}$

b) $\cot x = \underline{\boxed{\cos x}} \times \underline{\boxed{\csc x}}$

e) $\dfrac{\cot x}{\cos x} = \dfrac{\boxed{\csc x}}{\underline{\qquad}}$

c) $\cot x = \dfrac{\boxed{\csc x}}{\sec x}$

f) $\dfrac{1}{\csc x} = \dfrac{\boxed{\sin x}}{\underline{\qquad}}$

9. What is the $\sin^{-1}(\cos(3))$ in radians? (4pts) $\underline{-1.429}$

10. What is the $\arcsin(\csc^{-1}(3))$ in radians? (6pts) $\underline{.3467}$

11. A weight on a spring is dropped with initial velocity of 5cm/sec from at height of 3 cm above the origin (-3 cm) and we know that $\omega = 2$. Using the formula for height as a function of time $h(t) = \dfrac{v_0}{\omega}\sin(\omega t) + x_0 \cos(\omega t)$.
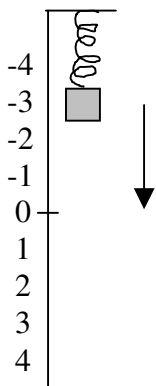
a) Write the function of h(t) with all of the constants filled in. (3pts)

$$h(t) = \frac{5}{2}\sin(2t) - 3\cos(2t)$$

b) What is the spring's height after 5 seconds? (3pts)

$$h(5) = \frac{5}{2}\sin(10) - 3\cos(10) = 1.157\text{cm}$$

-4
-3
-2
-1
0
1
2
3
4

If $y = A\sin[B(x - C)] + D$

Period $= \dfrac{Period_0}{B}$ The original period for a sin, cos, sec, & csc is 2π and for tan or cot it is π

Frequency$= \dfrac{1}{P}$ Phase Shift $= C$ Amplitude $=A=\left|\dfrac{\max - \min}{2}\right|$

D=middle of the graph or $\dfrac{\max + \min}{2}$ Range$= [\min,\max]$

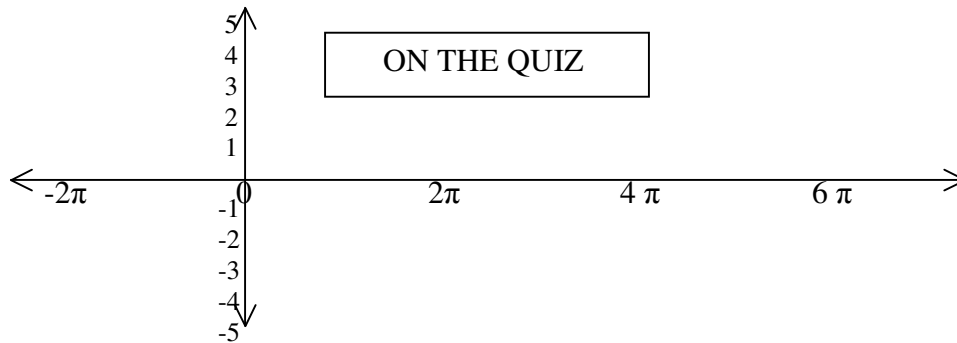12. $y = -8\sin\left(\dfrac{\pi}{3}x - \dfrac{\pi}{6}\right) - 5$ You do **not** need to graph this.

a) Period $y = 2\pi/\pi/3 = 6$ $\underline{\qquad}$(2pt)

b) Frequency   1/6 $\underline{\qquad}$ (1pt)

c) Phase Shift   1/2 $\underline{\qquad}$ (1pt)

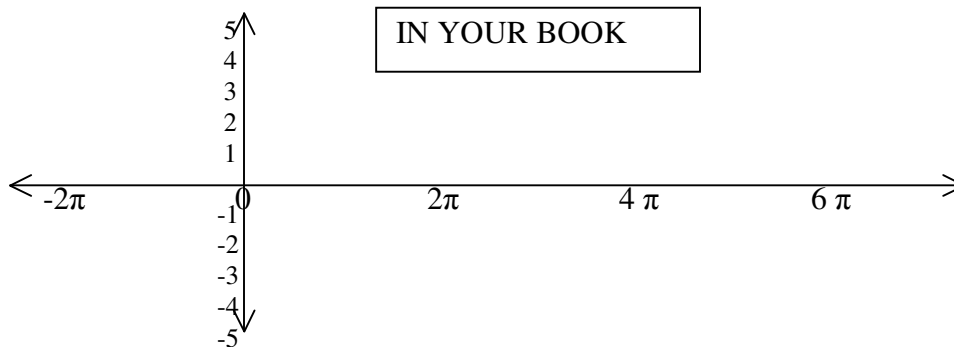d) Amplitude   -5   _____ (1pt)

13. Graph $y = 2\cos(x + \pi)$ (5pts)

ON THE QUIZ

14. Graph the cosecant function remember to use reciprocal function (ie. sin or cos) as a guide (8pts)

IN YOUR BOOK

15. Fill in the given identities: (4pts)

a) $\sin(\theta) = \dfrac{opp}{hyp}$

b) $\cos(\theta) = \dfrac{adj}{hyp}$

c) $\tan(\theta) = \dfrac{opp}{adj}$

16. I want to know the height of a building so I stand 110 feet away and take a measurement and find that the angle is $\dfrac{\pi}{11}$ (Check the mode on your calculator) This is not drawn to scale. (6pts)

$$\tan\frac{\pi}{11} = \frac{opp}{110} \qquad \text{height=32.3ft}$$

$\dfrac{\pi}{11}$

110ft