Math 112, section _____ _____ NAME: _____
Test 2, version A, spring 2012 100
Sections 7.6-7.8 & 8.1-8.5 Seat Location: _____

Show all your work. Full credit is based on your work shown!

6 pts

1. a. Use a sum or difference identity to write the expression as a function of a single angle, then find the **exact value** of the expression. $\sin 265° \cos 55° - \cos 265° \sin 55°$ = _____

= _____ = _____

10 pts

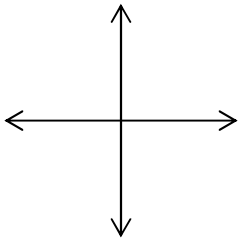
b. Use a sum or difference identity to find the **exact value** of $\cos\frac{13\pi}{12}$.

24pts

2. If $\sin\theta = -\frac{12}{13}$ *, with* $\frac{3\pi}{2} < \theta < 2\pi$, then θ is in quadrant _____ and $\left(\frac{\theta}{2}\right)$ is in quadrant _____.

Find the **exact value** of each of the following:
(sketch a reference triangle and label its sides.)

a. $\cos\theta =$



b. $\cos\left(\frac{\theta}{2}\right) =$

c. $\sin(2\theta) =$

d. $\cos(2\theta) =$

3. Establish each identity. Show all your steps to indicate which identities you used.

4 pts

a. $\sin\alpha\csc\alpha - \cos^2\alpha = \sin^2\alpha$

8 pts

b. $\dfrac{\tan\theta + \cot\theta}{\sec\theta\csc\theta} = 1$

8 pts

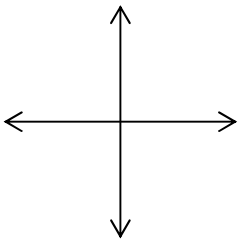
c. $(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$

12 pts

4. Evaluate without a calculator giving **exact values**. Draw and label a sketch to illustrate each one. [Note: Your sketch should show the angle and a labeled triangle or a point on the unit circle.]

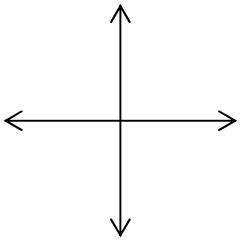
a. $\tan^{-1}\left(-\sqrt{3}\right)$= _____

reference $\angle$ = ____
(in radians)



b. $\sin\left[\cos^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)\right] = \sin[\_\_\_\_\_] = \_\_\_\_\_$

reference $\angle$ = ____
(in radians)



8pts

5. Write the equation of the cosine function that satisfies the following information.

Amplitude = 3, period = π, phase shift = $\frac{\pi}{2}$ units to the left, and vertical shift = up 4 unit.

20pts

6. For each of the following functions, graph at least two periods (one period in the positive x direction and one period in the negative x direction.) Find the pertinent information (amplitude, period, phase shift, x-scale, etc.) **Label the axes with appropriate values**. Asymptotes should be dashed lines. Plot the "critical" points in each period.

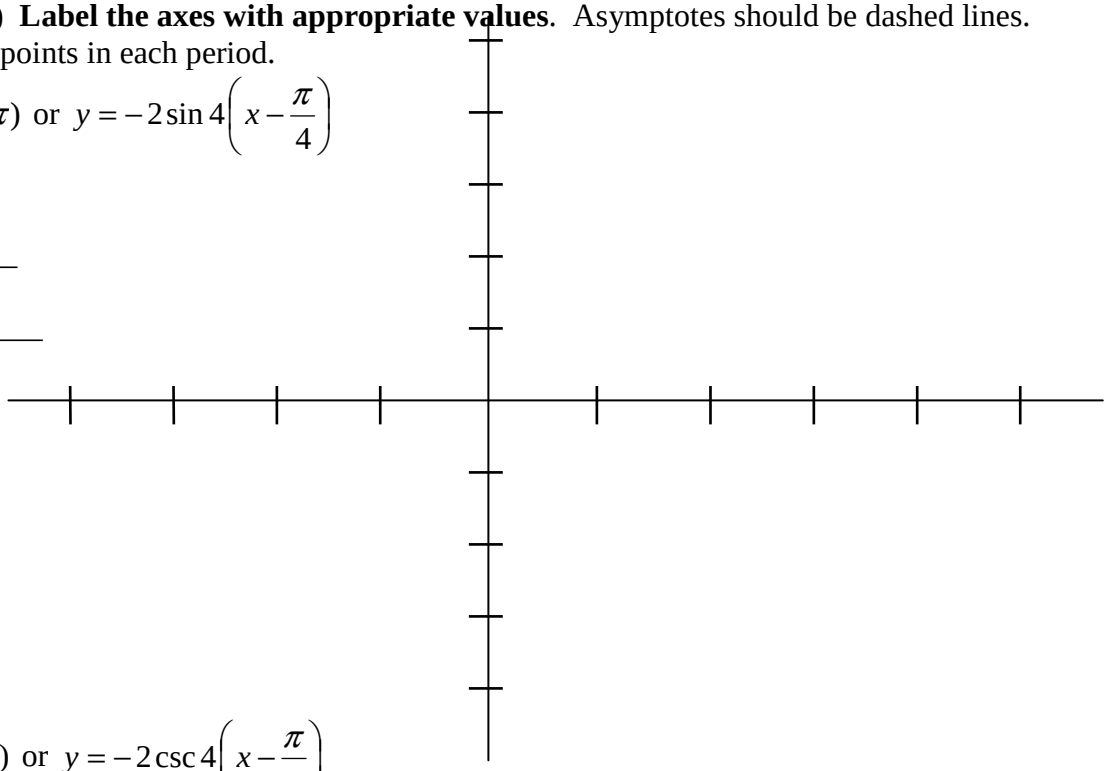
a. $y = -2\sin(4x - \pi)$ or $y = -2\sin 4\left(x - \frac{\pi}{4}\right)$

period: _____

amplitude: _____

phase shift : _____

x | y



b. $y = -2\csc(4x - \pi)$ or $y = -2\csc 4\left(x - \frac{\pi}{4}\right)$

x | y