Math 112 Name:_____

MTH 112 Exam 1 Review
Non-Calculator Portion

For questions 1 – 10, find the exact value of each expression.

1. $\sin(60^{\circ})$

2. $\cos\left(\frac{3\pi}{4}\right)$

3. $\sin\left(\frac{-5\pi}{6}\right)$

4. $6\cos\left(\frac{3\pi}{4}\right) - 2\tan\left(-\frac{\pi}{3}\right)$

5. $4\csc\left(\frac{3\pi}{4}\right) - \cot\left(-\frac{\pi}{4}\right)$

6. $\sin^2(135°) + \cos^2(135°)$

7. $\csc\left(\frac{\pi}{3}\right)\tan\left(\frac{\pi}{3}\right)$

8. $\sec(\pi) - \csc\left(\frac{\pi}{2}\right)$

9. $1 - \sin^2 30° - \sin^2 60°$

10. $\cos(540°) - \tan(-405°)$

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11. Find the exact values of the remaining trigonometric functions if $\csc(\theta) = -2$ and $\pi < \theta < \frac{3\pi}{2}$

$\sin\theta =$ _____ $\csc\theta =$ _____

$\cos\theta =$ _____ $\sec\theta =$ _____

$\tan\theta =$ _____ $\cot\theta =$ _____

12. Name the exact values of the 6 trigonometric functions of t if $P = (-\frac{1}{3}, \frac{2\sqrt{2}}{3})$

$\sin\theta =$ _____ $\csc\theta =$ _____

$\cos\theta =$ _____ $\sec\theta =$ _____

$\tan\theta =$ _____ $\cot\theta =$ _____

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13. Graph $y = 3\sin(2x - 2\pi)) - 1$ after first stating the amplitude, period, midline, phase shift, and horizontal shift. Show at least two periods, at least 5 specific points, and make sure you clearly mark and label your axis.

Amplitude:

Period:

Midline:

Phase Shift:

Horizontal Shift:

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For statements 1-6, state if the statement is true or false. Write out the word "true" or "false". **If the statement is false explain why or correct the statement to make it true.**

1. The function, y = cos (2x) is an odd function. 1._____

2. Since $\sin 45° = \cos 45°$, we can always assume that $\sin\theta = \cos\theta$. 2._____

3. Sine has a range of all real numbers. 3._____

4. The graphs of $f(x) = \sin x$ and $g(x) = \cos x$ are identical graphs except for a horizontal shift. 4._____

5. When $\csc\theta > 0$ and $\cos\theta < 0$, the angle is in Quadrant III. 5._____

6. Radians and degrees measure the same things.. 6. _____

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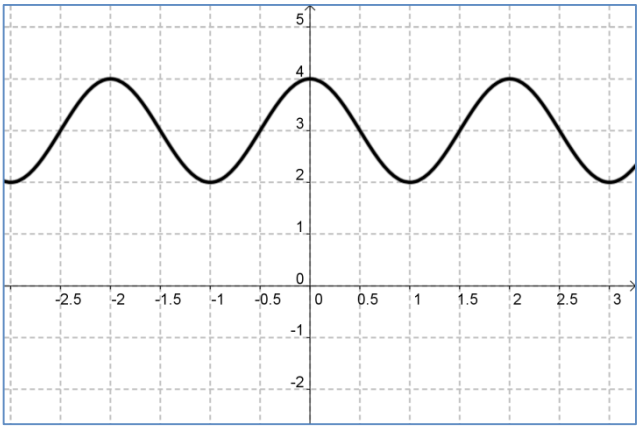
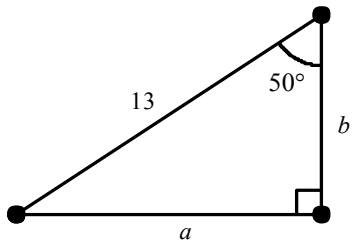
7. Find a sine and cosine function that models the given graph.



Sine Function:_____ Cosine Function:_____

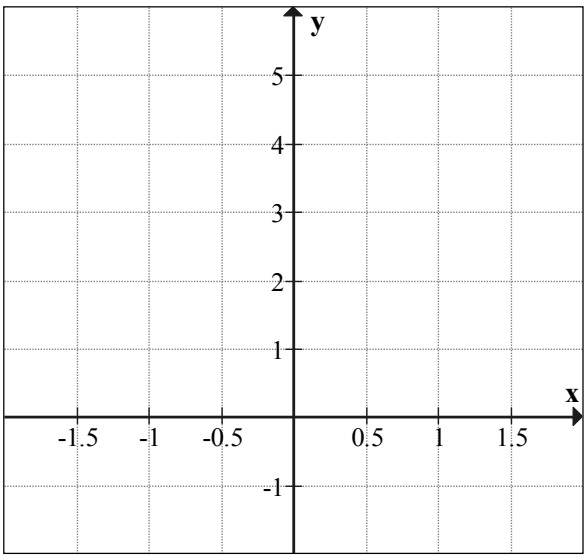
8. How far does the tip of a 16 centimeter long minute hand on a clock move in 15 minutes? Round your answer to two decimal places if necessary and show all work.

9. Find the values of the missing lengths, a and b. Picture not drawn to scale. Round your final answers to 4 digits behind the decimal place.



10. Let $f(x)=3\cos\left(\sin\left(\frac{\pi x}{2}\right)\right)+x$.

a.) Using your calculator, make an accurate graph of $y=f(x)$ on the grid shown, where x is in radians.



b.) Use your calculator to solve the equation $f(x)=2$. Write your answer(s) accurate to two digits behind the decimal place in a solution set.

c.) f has a local maximum somewhere on the interval $(-1,1)$. Name the maximum **point** where both coordinates are accurate to two digits behind the decimal place.

d.) Is f periodic? **Briefly** explain why or why not.