
Read Me First: Show all essential work neatly. Use correct notation when presenting your computations. Write using complete sentences. In particular, be very careful when using "=", **equals**, and " \Rightarrow ", **implies**. Do not "box" your answers. Communicate.

1. (6 pts.) Find the amplitude, period, and phase shift of the following function: $y = -3 \cdot \cos(-2x + (\pi/2))$

Amplitude =

Period =

Phase Shift =

2. (6 pts.) Write the equation of a sine function that has all the given characteristics:

Amplitude = 4

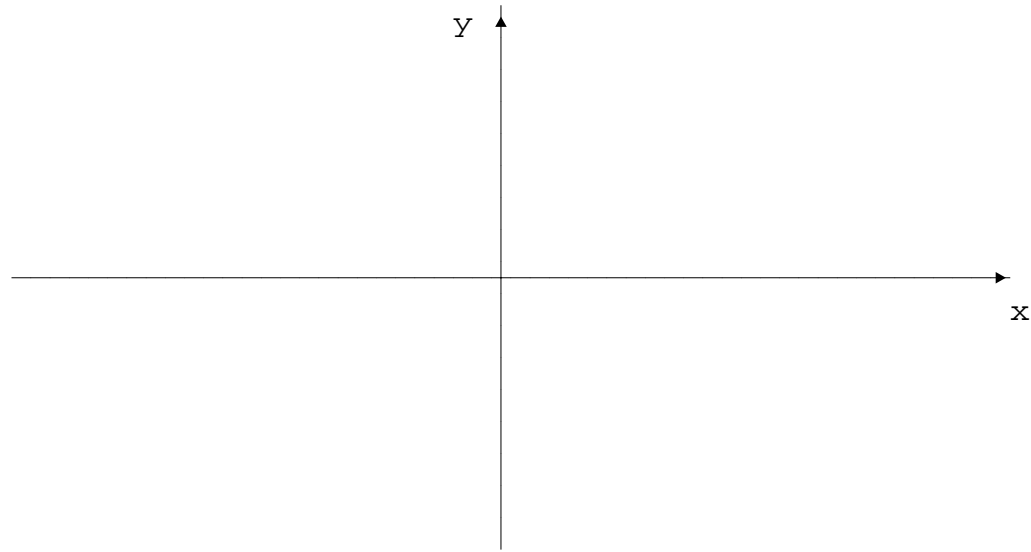
Period = $\pi/3$

Phase Shift: $-(3/4)$

3. (18 pts.) Fill in the following table with the information requested concerning domain, range, and period.

Function Name	Domain (in radians)	Range	Period (in radians)
$\sin(\theta)$			
$\cos(\theta)$			
$\tan(\theta)$			
$\cot(\theta)$			
$\sec(\theta)$			
$\csc(\theta)$			

4. (5 pts.) Carefully sketch $y = 4\sin(2x - \pi)$ through one period. You will need the amplitude, period, and phase shift to do this.



5. (5 pts.) Establish the following identity.

$$\frac{1 - \cos(\alpha)}{\sin(\alpha)} = \frac{\sin(\alpha)}{1 + \cos(\alpha)}$$

6. (10 pts.) Find the exact value of each of the following expressions if $\tan(\alpha) = 5/12$ with $\pi < \alpha < 3\pi/2$ and $\sin(\beta) = -1/2$ with $\pi < \beta < 3\pi/2$. **Show all the uses of appropriate identities.**

$$\sin(\alpha - \beta) =$$

$$\cos(\alpha + \beta) =$$

7. (5 pts.) Obtain the exact value of $\sin(\pi/8)$. **Show all the uses of appropriate identities.**

$$\sin(\pi/8) =$$

8. (5 pts.) If $\sec(\theta) = 3$ and $\sin(\theta) > 0$, what is the exact value of $\cos(2\theta)$?? **Show all the uses of appropriate identities.**

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

9. (5 pts.) Express the following product as a sum containing only sines or cosines.

$$\sin(4\theta)\cos(6\theta) =$$

10. (5 pts.) Use your calculator to find the value of $\sec^{-1}(-4/3)$ rounded to two decimal places.

$$\sec^{-1}(-4/3) =$$

11. (5 pts.) Find the exact value of $\sin^{-1}(\sin(-7\pi/6))$.

$$\sin^{-1}(\sin(-7\pi/6)) =$$

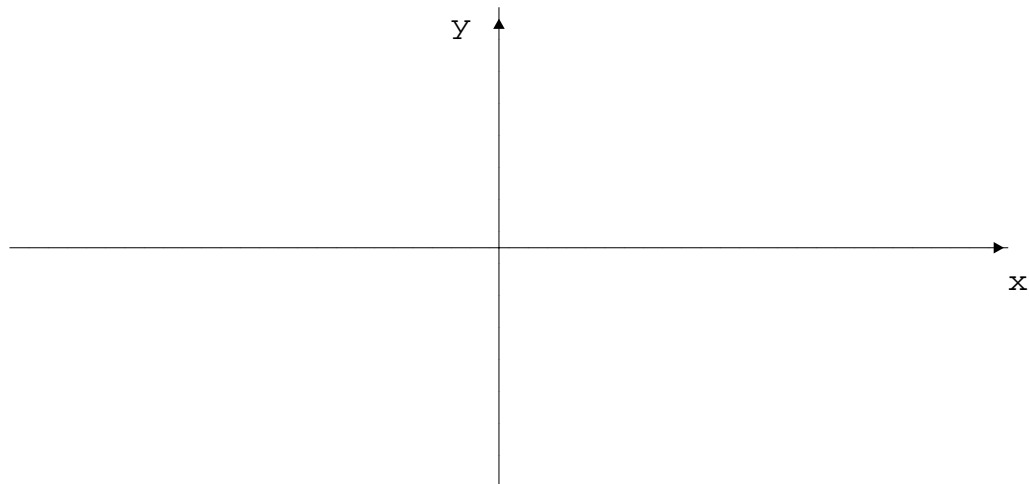
12. (5 pts.) Write $\cos(\cos^{-1}(u) + \sin^{-1}(v))$ as an algebraic expression containing u and v .

$$\cos(\cos^{-1}(u) + \sin^{-1}(v)) =$$

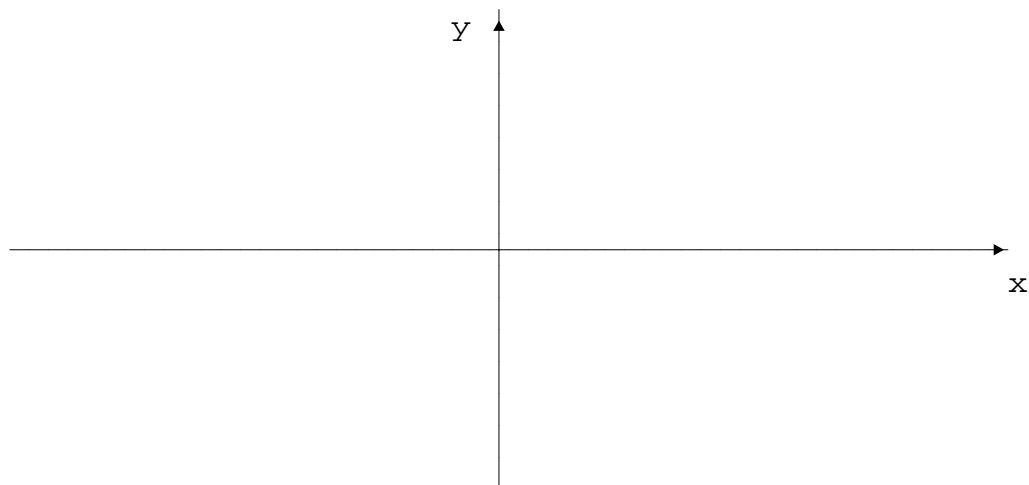
13. (5 pts.) Find the exact value of $\tan(2 \cdot \tan^{-1}(3/4))$.

$$\tan(2 \cdot \tan^{-1}(3/4)) =$$

14. (5 pts.) Carefully sketch the graph of $y = \sin^{-1}(x)$. Label very carefully.



15. (5 pts.) Carefully sketch the graph of $y = \cos^{-1}(x)$. Label very carefully.



16. (5 pts.) Carefully sketch the graph of $y = \tan^{-1}(x)$. Label very carefully.

