1. (4 pts.) If $\theta = -240°$, what is the radian measure of θ as an exact multiple of π??

$\theta =$

2. (4 pts.) If $\theta = 7\pi/6$ in radian measure, what is the value of θ in degrees??

$\theta =$

3. (4 pts.) If $s = 4$ meters is the length of an arc of a circle of radius $r = 3$ meters subtended by a central angle θ, what is the exact value of θ in degrees??

$\theta =$

4. (4 pts.) If $\theta = 61°40'21''$, convert θ to a decimal in degrees rounded to two decimal places.

$\theta =$

5. (4 pts.) If $\theta = 28.411°$, convert θ to D°M′S″ form with the answer rounded to the nearest second.

$\theta =$

6. (4 pts.) An object is traveling around a circle with a radius of 10 meters. Suppose that in 20 seconds a central angle of 2/3 radian is swept out. What is the angular speed ω of the object, and what is the linear speed ν of the object? *Here give the exact value of the item followed by its decimal approximation.*

$\omega =$

$\nu =$

7. (4 pts.) If θ is an acute angle, $\sin(\theta) = 3/5$, and $\cos(\theta) = 4/5$, obtain the exact values for the remaining four trigonometric functions.

$\tan(\theta) =$ $\cot(\theta) =$

$\sec(\theta) =$ $\csc(\theta) =$

8. (6 pts.) If the point (-2,-5) is on the terminal side of an angle θ, obtain the exact value of each of the six trigonometric functions of θ.

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

$\tan(\theta) =$ $\cot(\theta) =$

$\sec(\theta) =$ $\csc(\theta) =$

9. (4 pts.) In which quadrant is $\sin\theta < 0$ and $\cot\theta > 0$?

10. (4 pts.) What is the reference angle θ_r for an angle $\theta = -135°$?

$\theta_r =$

11. (4 pts.) What is the exact value of $\tan(19\pi/6)$?

$\tan(19\pi/6) =$

12. (4 pts.) If $\cos\theta = .4$, find $\cos(\theta + \pi)$.

$\cos(\theta + \pi) =$

13. (5 pts.) Suppose $\cos\theta = -(1/4)$ and $\tan\theta > 0$. What is the exact value of each of the remaining trigonometric functions?

$\sec(\theta) =$ $\tan(\theta) =$

$\sin(\theta) =$ $\csc(\theta) =$

$\cot(\theta) =$

14. (5 pts.) Suppose a is a number such that if $f(x) = \csc(x)$, then $f(a) = -5$. Obtain the exact value of the following:

$f(-a) =$

$f(a) + f(a + 4\pi) + f(a + 16\pi) =$

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

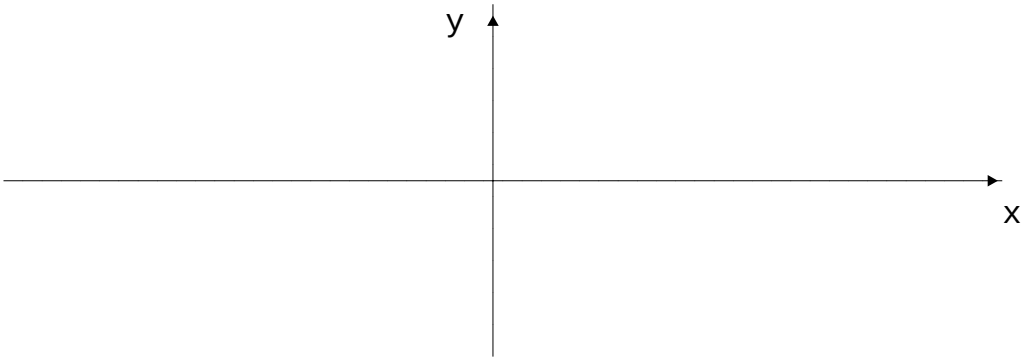
Function Name	Domain (in radians)	Range	Period (in radians)
$\sin(\theta)$			
$\cos(\theta)$			
$\tan(\theta)$			
$\cot(\theta)$			
$\sec(\theta)$			
$\csc(\theta)$			

16. (2 pts.) Use a calculator to obtain the approximate value of each of the following expressions. Round your answer to two decimal places.

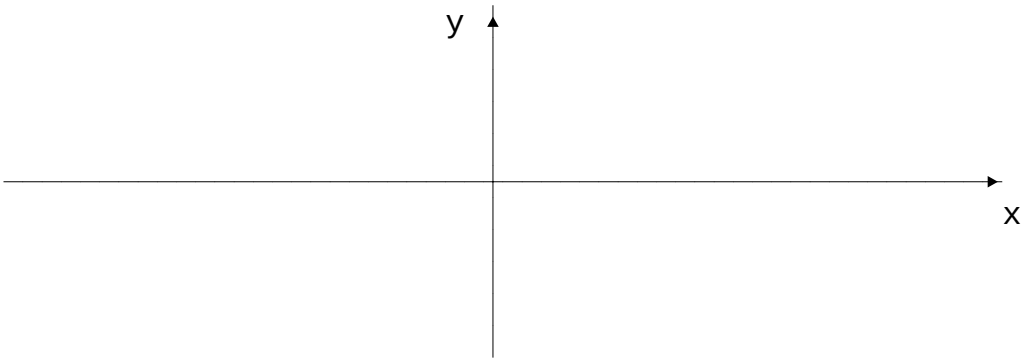
$\sin 1 \approx$

$\sin 1° \approx$

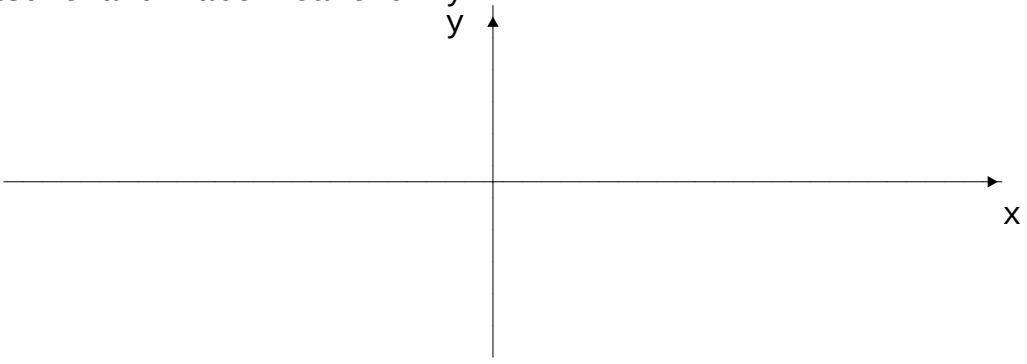
17. (5 pts.) Carefully sketch y = sin(x) through two periods that are symmetric about the origin. Use radian measure and label carefully.



18. (5 pts.) Carefully sketch y = cos(x) through two periods that are symmetric about the origin. Use radian measure and label carefully.



19. (5 pts.) Carefully sketch y = tan(x) through one period. Use radian measure and label carefully.



20. (5 pts.) Carefully sketch y = csc(x) through one period. Use radian measure and label carefully.