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 "⇒", **implies**. Do not "box" your answers. Communicate.*

1. (5 pts.) If $\theta = 135°$, what is the radian measure of θ as an exact multiple of π??

$\theta =$

2. (5 pts.) If $\theta = 11\pi/6$ in radian measure, what is the value of θ in degrees??

$\theta =$

3. (5 pts.) If $s = 8$ meters is the length of an arc of a circle of radius $r = 6$ meters subtended by a central angle θ, what is the exact value of θ in degrees??

$\theta =$

4. (5 pts.) If $\theta = 61°35'20''$, convert θ to a decimal in degrees rounded to two decimal places.

$\theta =$

5. (5 pts.) If $\theta = 28.511°$, convert θ to D°M′S″ form with the answer rounded to the nearest second.

$\theta =$

6. (5 pts.) An object is traveling around a circle with a radius of 20 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.*

ω =

ν =

7. (5 pts.) If θ is an acute angle, and $\cos(\theta) = 2/3$, obtain the exact values for the remaining four trigonometric functions.

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

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

$\sin(\theta)$ =

8. (5 pts.) If the point (-5, 4) 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. (5 pts.) What is the reference angle θ_r for an angle $\theta = -195°$?

θ_r =

10. (5 pts.) Suppose $\cos\theta = -(1/5)$ and $\tan\theta > 0$. What is the exact value of each of the remaining trigonometric functions?

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

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

$\cot(\theta) =$

11. (18 pts.) Fill in the following table with the information requested concerning domain, range, and period.

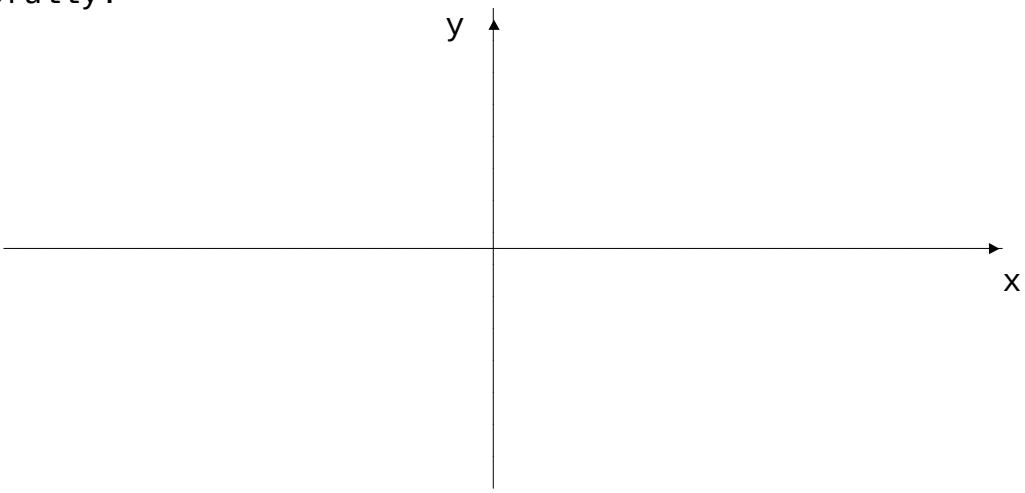
Function Name	Domain (in radians)	Range	Period (in radians)
$\cot(\theta)$			
$\sec(\theta)$			
$\tan(\theta)$			
$\sin(\theta)$			
$\cos(\theta)$			
$\csc(\theta)$			

12. (2 pts.) Use a calculator to obtain the approximate value of each of the following expressions. Round your answer to two decimal places.

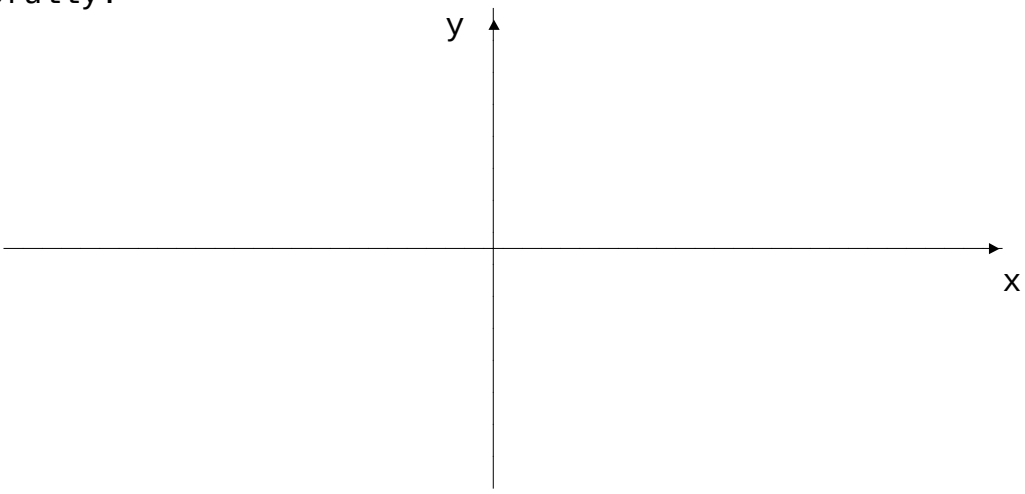
$\sin 10 \approx$

$\sin 10° \approx$

13. (10 pts.) Carefully sketch y = cos(x) through two periods that are symmetric about the origin. Use radian measure and label carefully.



14. (10 pts.) Carefully sketch y = csc(x) through two periods that are symmetric about the origin. Use radian measure and label carefully.



15. (10 pts.) Carefully sketch y = cot(x) through one period. Use radian measure and label carefully.