SLU PreCalculus TEST 2 Chapter 5 and Section 6.1 Spring 2007

NAME: _____Score_____/100

Please print

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

You may use a calculator, but anytime you use the calculator your work must make it very clear to me what you did to arrive at your answer.

Questions 1 – 10 are each worth 3 points. The remaining questions are each worth 5 points. Circle T or F, whichever is correct.

1. T F The period of sin(2x) is π
2. T F $\sin^2(x) - \cos^2(x) = 1$
3. T F $\cos(x) \circ \sin(x) = x$
4. T F $\cos(x) \circ \cos^{-1}(x) = x$.
5. T F $\sin(x) = \dfrac{1}{\sec(x)}$

Fill in each of the blanks to complete the table. NO DECIMALS

Degree Measure	**Arc Length Radian Measure**	**Coordinates**	**Cos θ**	**Sin θ**
0	**0**	$\left(\frac{\sqrt{4}}{2},\frac{\sqrt{0}}{2}\right)=(1,0)$	**1**	**0**
30°		$\left(\frac{\sqrt{3}}{2},\frac{\sqrt{1}}{2}\right)=\left(\frac{\sqrt{3}}{2},\frac{1}{2}\right)$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
	π/4	$\left(\frac{\sqrt{2}}{2},\frac{\sqrt{2}}{2}\right)=\left(\frac{1}{\sqrt{2}},\frac{1}{\sqrt{2}}\right)$		
60°	**π/3**		$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
90°	**π/2**	$\left(\frac{\sqrt{0}}{2},\frac{\sqrt{4}}{2}\right)$ **= (0,1)**	**0**	**1**

6. What is the range of the sine function?

7. What are the zeros of the cosine function?

8. Convert 55° to radians. Make sure you tell me the formula you used.

9. In terms of the triangle in Figure 1,

what is $\sin(\beta) =$ and what is $\tan(\alpha) =$

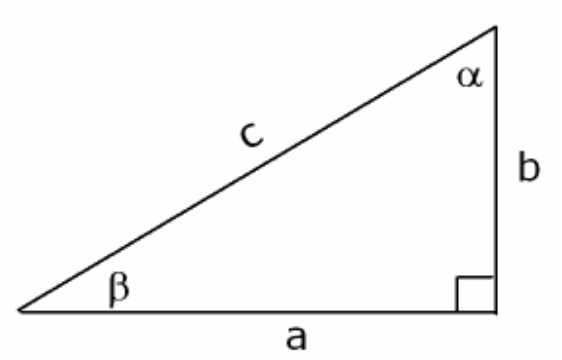
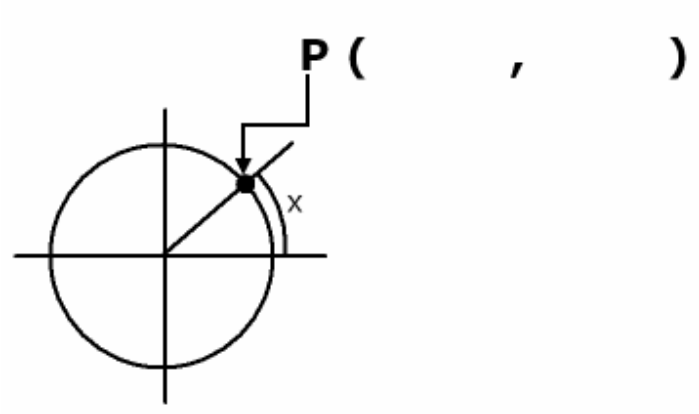


Figure 1

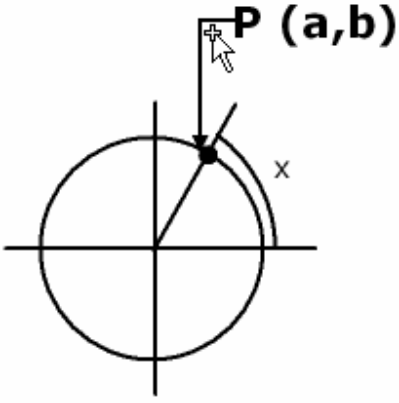
10. Supply the coordinates of the point P on the UNIT CIRCLE diagram. Do not interpret the angle to be a 45 degree angle.



11. Refer to the diagram of the unit circle shown at the right.

Express each of the following in terms of a and b.

sin(x) = cos(x) = tan(x) =



Unit Circle

12. If $f(x) = 7\sin\left(\frac{1}{2}x - 9\right)$, then

The amplitude of f is _____, the period of f is _____ and the phase shift of f is _____ to the _____

For Problems 13 – 22, Show all necessary work. NO WORK – NO CREDIT

Refer to Figure 2 for Problems 13, 14, and 15,

13. Find the value for b if a = 5, c = 13.

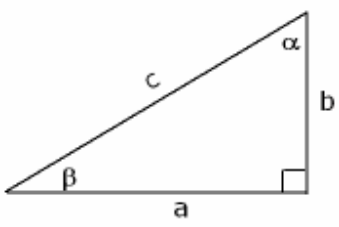
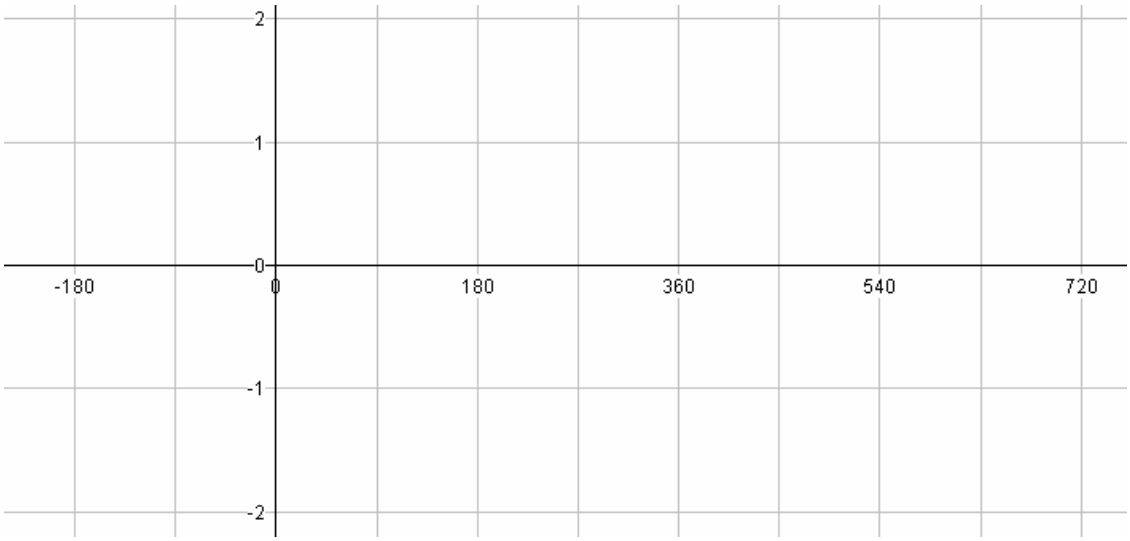


Figure 2

14. Find the value of α if $\beta = 12° 45'$

15. Solve the triangle if $\alpha = 23°$ and a = 73

16. Sketch the graph of the sine function



17. Prove that $\tan(\theta)\csc(\theta)\cos(\theta) = 1$
PROOF:

18. Prove that $(1 - \cos(\theta))(1 + \cos(\theta)) = \sin^2(\theta)$
PROOF:

19. Prove that $\sec^2(\theta) - \tan^2(\theta) = 1$ Hint: convert to sine and cosine

PROOF:

20. Describe (in words) the graph of $3\cos(5x + 3\pi)$