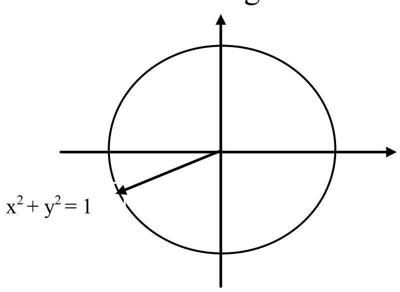
MATH115 PRECALCULUS 100pts TEST 4 FALL 2011 INSTRUCTOR: CARLA MORRIS

p.1 NAME:______________________

4pts 1. Convert $\frac{7\pi}{6}$ radians to degrees.

4pts 2. Would sin6 be positive or negative? Use unit circle to determine the quadrant and use definition of the trigonometric function in order to answer the question.

4pts 3. Given the diagram below and that x = -15/17 find $\cos\theta$ and $\tan\theta$



In problems 4-11 use a unit circle, give the reference angle and quadrant, and then use trigonometric definition to give the numerical answer. (4 points each)

4. $\tan(2\pi)$ 5. $\sin(3\pi/2)$ 6. $\csc(360°)$

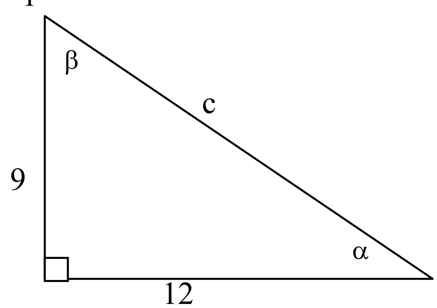
7. $\sin(150°)$ 8. $\tan(240°)$ 9. $\cos(7\pi/4)$

10. $\cot(5\pi/3)$ 11. $\sec(225°)$

4pts 12. Prove the following is an identity $\tan\theta\,(\tan\theta + \cot\theta) = \sec^2\theta$

4pts 13. Simplify $\dfrac{\sin\theta + \cos\theta}{\cot\theta + 1}$

6pts 14.



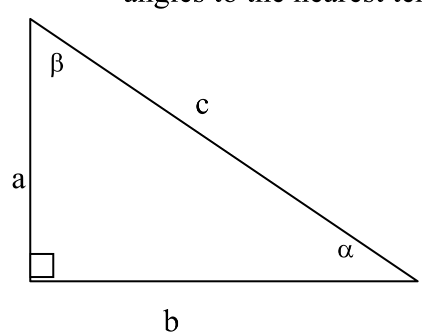
using the right triangle to the left first find the length c then find the following:

a) $\sin\alpha$

b) $\cos\beta$

c) $\tan\alpha$

6pts 15. Given $\alpha = 37.5^\circ$, b = 16 solve the triangle round lengths to two decimal places and angles to the nearest tenth of a degree.



4pts 16. Prove the following is an identity $\dfrac{1 - \cot^2\theta}{1 + \cot^2\theta} = 2\sin^2\theta - 1$

4pts 17. If $\tan\theta = \frac{4}{3}$ and $180° < \theta < 270°$, find $\sec\theta$

5pts 18. Graph $y = 25\sin\left(\frac{1}{3}x\right)$

5pts 19. Graph $y = -8\cos(x - \pi/4)$

5pts 20. Find the exact value of cos75° using the addition formulas.

5pts 21. Use addition formulas to verify $\cos 2\theta = 2\cos^2\theta - 1$

4pts 22. Find all solutions on $[0, 2\pi]$ for $\cos^2\theta + 7\cos\theta + 6 = 0$

4pts 23. Find all solutions on $[0°, 360°]$ for $\cos^3\theta + \cos^2\theta = 0$

$x^2 + y^2 = 1$
$\pi = 3.14$ radians
$\pi = 180°$
$\cos^2\theta + \sin^2\theta = 1$
$1 + \tan^2\theta = \sec^2\theta$
$\cot^2\theta + 1 = \csc^2\theta$
$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$

$\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$

If in the form Asin(Bx + C) or Acos(Bx + C)
$|A|$ = amplitude period = $2\pi/B$
phase shift = $-C/B$