Chapter 4 Review

Test on Friday**, February 24!**

1. A wire is stretched from the top of a 200-foot broadcasting tower to an anchor making an angle of 58° with the ground. How long is the wire? How far is the anchor from the base of the tower?
2. The sonar of a navy cruiser detects a submarine that is 4000 feet from the cruiser. The angle between the water level and the submarine is 31.5°. How deep is the submarine?
3. Reference Angles: Find the measure of the reference angle for each angle. Your answer *must* be in radians.
    a. Challenge! 290°
    b. Challenge! $\frac{13\pi}{9}$
    c. $\frac{5\pi}{3}$
    d. $\frac{7\pi}{6}$
4. Unit Circle: Determine the 6 trigonometric functions of each angle.
    a. $\frac{5\pi}{4}$
    b. $\frac{\pi}{3}$
5. Unit Circle: For each problem, find two solutions of each equation. Solutions *must* be in radians.
    a. $sin\theta = \frac{-1}{2}$
    b. $tan\theta = undefined$
    c. $cos\theta = 0$
    d. $cos\theta = \frac{\sqrt{2}}{2}$
6. Unit Circle: State the quadrant in which θ lies
    a. $sin\theta < 0$ *and* $cos\theta < 0$
    b. $sec\theta > 0$ *and* $cot\theta < 0$
    c. $cot\theta > 0$ *and* $cos\theta > 0$
    d. $tan\theta > 0$ *and* $csc\theta < 0$
7. Trigonometric Functions: Evaluate the trigonometric functions of the following.
    a. $cot\theta = \frac{-6}{11}$ and $sin\theta > 0$. Find $sec\theta$.
    b. $sec\theta = \frac{10}{7}$ and $sin\theta < 0$. Find $tan\theta$.
8. Trigonometric Functions: Use the given information to determine the other five trigonometric functions.
    a. $cos\theta = \frac{-2}{3},\ sin\theta > 0$
    b. $cos\theta = \frac{1}{8},\ \frac{3\pi}{2} < \theta < 2\pi$
    c. $cot\theta = \frac{-4}{3},\ sin\theta < 0$
9. Graphing: State the amplitude, period, phase shift, and vertical shift for each function. Reminder: The phase shift cannot always be read directly from the equation!. Then, graph 2 periods of the function.
    a. $f(x) = sin2(x + 2\pi) - 3$
    b. $f(x) = 6cos\left(4\theta + \frac{\pi}{3}\right)$
    c. $f(x) = -3cos(6x + \pi)$
    d. $f(x) = -2csc(x + \frac{\pi}{2})$
    e. $f(x) = 2 + \frac{1}{4}sec(\frac{1}{2}x - \pi)$
    f. $f(x) = 4csc(\pi - x)$
10. Graphing: Graph the following
    a. $y = \frac{1}{2}cot(\frac{\pi}{4}x + \frac{\pi}{4})$
    b. $f(x) = tan(2x - \pi)$
    c. $f(x) = tan(\frac{x}{2} + \pi)$
    d. $f(x) = 3cot(x + \frac{\pi}{4})$
11. Inverse Trig
    a. $cos^{-1}(tan(\frac{3\pi}{4}))$
    b. $sec[artan(-\frac{2}{3})]$
    c. $csc(arctan\frac{x}{\sqrt{7}})$