Math 150 - Week-In-Review 9

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Problem Statements

1. Solve using elimination: $\begin{cases} 4x - 5y = 8 \\ -8x + 10y = -16 \end{cases}$

2. Solve using whichever method you choose: $\begin{cases} (x+4)^2 + y^2 = 4 \\ y - \sqrt{x} = 0 \end{cases}$

3. Find all solutions to the system of equations

$$\begin{cases} x^2 + y^2 = 25 \\ xy = 12 \end{cases}$$

4. Determine all solutions to the system:

$$\begin{cases} \sqrt{x} + \sqrt{y} = 5 \\ \sqrt{x} - \sqrt{y} = 1 \end{cases}$$

5. Convert $75°$ to radians.

6. Convert $\dfrac{19\pi}{12}$ to degrees.

7. Let $(-24, 7)$ be a point on the terminal side of θ. Find the sine, cosine of θ.

8. Let $\alpha = 135°$ and $\beta = 55°$. Sketch α and β. Compute a supplementary angle for α. Compute a complementary angle for β.

9. Suppose α is an acute angle with $\cos(\alpha) = \frac{3}{5}$. Determine $\sin(\alpha)$ and use this to plot α in standard position. State the sine and cosine of the following angles:

   (a) $\theta = \pi + \alpha$

   (b) $\theta = 2\pi - \alpha$

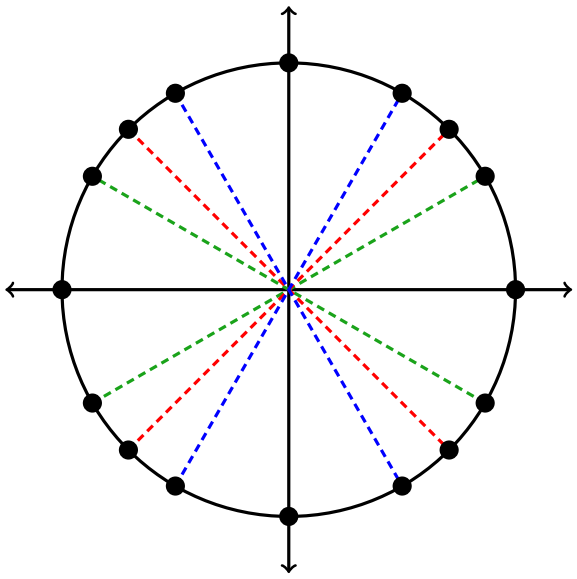
   (c) $\theta = 3\pi - \alpha$

   (d) $\theta = 2\pi + \alpha$

10. Find the reference angle for:
    a) $\theta = 330°$

    b) $\theta = \dfrac{13\pi}{9}$

    c) $\theta = -255°$.



11. Evaluate the following:

a) $\sin\dfrac{4\pi}{3}$

b) $\cos\dfrac{4\pi}{3}$

a) $\sin 315°$

b) $\cos 315°$

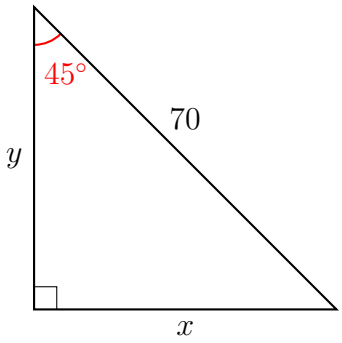
12. Use the reference angle to find the indicated trigonometric value for the specified angles.

(a) $\sin\left(\dfrac{7\pi}{6}\right) =$

(b) $\cos\left(\dfrac{11\pi}{4}\right) =$

13. From a point on the ground 47 feet from the foot of a tree, the angle of elevation of the top of the tree is 30°. Find the height of the tree.

14. Find the exact value of x and y.



15. A circular sector created by a central angle of $\frac{3}{5}$ radians has an area of 1080 ft^2, determine the radius of the circle.

16. The planet Neptune has an orbit that is nearly circular. It orbits the Sun at a distance of 4497 million kilometers and completes one revolution every 165 years. How long is a full path of Nepture around the Sun? Then find the linear velocity of Neptune as it orbits the Sun.