Math 150 - Week-In-Review 8

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Problem Statements, sections 6.1, 6.2, 7.1

1. Solve the following system of linear equations.

$$\begin{cases} -3x + 5y = 20 \\ \frac{1}{8}x - \frac{5}{24}y = -\frac{5}{6} \end{cases}$$

2. Solve the following system of nonlinear equations.

$$\begin{cases} (x+2)^2 + y^2 = 2 \\ y - \sqrt{x} = 0 \end{cases}$$

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 following system.

$$\begin{cases} \sqrt{y} - x = -1 \\ y = x^2 - 3x - 6 \end{cases}$$

5. What is an angle?

   a) A measure of how far two points are from each other.
   b) A measure of rotation between two intersecting lines or rays.
   c) The distance between two parallel lines.
   d) The product of two line segments.

6. What is the definition of a radian?

   a) The angle formed by two perpendicular rays.
   b) The angle formed when the arc length is equal to the circle's radius.
   c) A measurement unit used for very small angles.
   d) The angle at the center of a semicircle.

7. Convert 135° to a fraction of a full circle.

8. Convert $63°$ to radians.

9. Convert $\dfrac{17\pi}{15}$ to degrees.

10. If an angle measures $210°$, what is its radian equivalent?

11. If an angle measures 25°, what type of angle is it?

12. Let $\alpha = 135^\circ$ and $\beta = 55^\circ$. Sketch α and β in standard position. Compute a supplementary angle for α. Compute a complementary angle for β.

13. Let $\alpha = \dfrac{2\pi}{5}$ and $\beta = \dfrac{-6\pi}{11}$. Sketch α and β in standard position. Compute a supplementary angle for α. Compute a complementary angle for β.

14. Sketch and find two coterminal angles for:
    a) $\theta = 330°$

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

    c) $\theta = -255°$.

15. A circular track has a radius of 50 meters. An athlete runs along the track, covering an angle of 120°. How far does the athlete run along the circular path?

16. 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. Note: area of the sector is found by $\frac{\theta}{2}r^2$, where θ is measured in radians.

17. A boy rotates a stone in a 3 ft long sling at a rate of 15 revolutions every 10 seconds. Find the angular and linear velocities of the stine.

18. Fill in the following unit circle with the common angles in one full revolution. (i.e angles of the form $\frac{n\pi}{6}, \frac{n\pi}{4}, \frac{n\pi}{3}, n\pi$)