1. Solve $(x - 2)(x + 3) > 0$. Write your answer in interval notation.

2. Find the center and radius of the circle $x^2 + y^2 - 6y + 5 = 0$.

3. Consider the function $f(x) = \frac{3x + 1}{x(x + 2)}$. Find
   (a) Domain of $f$
   (b) Any vertical asymptotes of $f$
   (c) Any horizontal asymptotes of $f$
   (d) A rough sketch of the graph of $f$

4. A 1 week-old sorghum plant has an average height of 2 inches. A 4 week-old sorghum plant has an average height of 8 inches. Assuming that the growth is linear,
   (a) Find an equation for the height of an average sorghum plant as a function of time.
   (b) Use part (a) to predict how tall a 5 week-old plant will be.

5. How is the graph of $f(x + 2) + 3$ related to the graph of $f(x)$?

6. Solve $3^{5x-1} = 3^{x^2+3}$.

7. Solve $\log_4(x) + \log_4(x + 6) = 2$.

8. A ball is thrown into the air. Its height is given by $h(t) = -16t^2 + 32t + 5$. Find the maximum height of the ball and time required to reach it.

9. Give exact values for the following
   (a) $\tan(60^\circ)$
   (b) $\cos\left(-\frac{3\pi}{4}\right)$
   (c) $\sin^{-1}\left(-\frac{1}{2}\right)$
   (d) $\sin\left(\tan^{-1}\left(\frac{1}{3}\right)\right)$

10. Find all values of $x$ in radians, $0 \leq x < 2\pi$, that satisfy $\cos(x)(2\sin(x) + 1) = 0$.

11. Convert the point $(2, \frac{3\pi}{4})$ from polar coordinates to rectangular coordinates.

12. If $\cos(x) = \frac{3}{5}$ and $\sin(x) = -\frac{4}{5}$, find $\sin(2x)$.

13. If $\theta$ is an angle in the 4th quadrant and $\cos(\theta) = \frac{5}{13}$, find exact values for
   (a) $\sin(\theta)$
   (b) $\sec(\theta)$
   (c) $\cot(\theta)$

14. If $\mathbf{u} = \langle 1, -2 \rangle$ and $\mathbf{v} = \langle 3, 4 \rangle$, find
   (a) $\mathbf{u} - 3\mathbf{v}$
   (b) $|\mathbf{v}|$
15. Solve the following system:

\[ 2x + 3y = 4 \]
\[ -x + y = 3 \]

16. Find the partial fraction decomposition for \( \frac{6 - 2x}{x(x - 2)} \).