1. Describe the end behavior of the polynomial \( p(x) = -\frac{5}{3}x^5 + 6x^2 + \frac{7}{4}x^9 - 7x + 12 \)

2. Find the equation of the circle whose center is the midpoint of the line segment between points \((2, 7)\) and \((-8, 9)\) and whose diameter is the length of this line segment.
3. Find the slope-intercept equation of the line that passes through the point \((6, -3)\) and that is perpendicular to the line \(5x - 4y + 6 = 0\).

4. It takes Chris 1 hour 20 minutes longer to clean the industrial kitchen than it does Jose. If they work together, it takes 6 hours to complete the cleaning. What is the correct set up of the problem to find \(x\), the number of hours it would take Chris to clean the kitchen by himself.
5. What is the domain of the function \( f(x) = \frac{\sqrt{8 - x}}{\sqrt{x^2 - 15x + 56}} \)?

6. What transformations of \( y = x^2 \) will yield \( f(x) = 2x^2 - 4x + 5 \)?

7. If \( f(x) = \sqrt{1 - x} \) and \( g(x) = \frac{4}{x^2} \), find and simplify \((f \circ g)(x)\) and its domain.
8. If \( f(x) = x^2 - 49 \) and \( g(x) = \frac{x - 7}{x + 8} \), find and simplify \( \left( \frac{g}{f} \right)(x) \) and its domain in interval notation.

9. A baseball is thrown upward at a velocity of 56 ft/sec. If it is released at a point 6 ft from the ground, its distance \( s \) from the ground at \( t \) seconds is given by \( s(t) = -16t^2 + 56t + 6 \). When will the baseball reach its maximum height and how high will it go?
10. A boat can travel 10 miles downstream in the same time it can travel 8 miles upstream. If the speed of the current is 4 mile/h, what is the speed of the boat.

11. Graph the piecewise function.

\[ f(x) = \begin{cases} 
  x^2 & \text{if } x > 1 \\
  3 & \text{if } x = 1 \\
  -x + 1 & \text{if } x < 1 
\end{cases} \]
12. Find the center and radius of the circle

\[ 5x^2 + 5y^2 + 4y + 405 = 90x \]

13. First state the difference quotient and then evaluate it for the function \( f(x) = \sqrt{x - 2} \).
14. If \( f(x) = \sqrt{1 + x} \), find its inverse function along with the inverse’s domain and range in interval notation. And draw the graphs on the same coordinate plane.
15. The graph of a function defined for \( x \geq 0 \) is given. Complete the graph for \( x < 0 \) to make an odd function.
16. Use the given graph of \( y = f(x) \) to graph \( y = -f(x + 3) - 2 \) on the same coordinate plane.
17. Algebraically prove \( f(x) = \frac{3}{x - 2} \) is a one-to-one function.

18. Test \( x^4y^3 - 6x^2 = 4x^2y^2 + |x^3| \) for \( y \)-axis symmetry.