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1. Suppose $f$ is a function and $f(3) = -4$
   
   (a) If $f$ is even, what is $f(-3)$?
   
   (b) If $f$ is odd, what is $f(-3)$?
   
   (c) If $f$ is one-to-one, what is $f^{-1}(-4)$?
   
   (d) If $g(x) = -1 + \sqrt{x^2 - 9}$, what is $(g \circ f)(3)$?
   
   (e) If $g(x) = -1 + \sqrt{x^2 - 9}$, what is $(f \circ g)(5)$?

2. Let $f$ be an odd function with $(2, 4)$ on its graph and let $g(x)$ be an even function with $(-2, 5)$ on its graph.
   
   (a) Find $(f + g)(2)$.
   
   (b) Find $\left( \frac{f}{g} \right)(-2)$.

3. If $f(x) = \frac{\sqrt{x+2} - 3}{9}$ and $g(x) = 3x + 1$, find $(f^{-1} \circ g^{-1})(x)$ and its domain.

4. Consider the piecewise function:

   
   $f(x) = \begin{cases} 
   |x| & -2 \leq x < 0 \\
   1 & x = 0 \\
   2x^2 & x > 0 
   \end{cases}$

   (a) Find the domain of the function.
   
   (b) Evaluate $f(-1)$ and $f(1)$.
   
   (c) Sketch a graph of the function.
5. Let \( g(x) \) be the function whose graph is the graph of \( y = (x + 1)^3 \) reflected across the y-axis, shifted down 3 units, moved 2 units to the left, and finally compressed vertically by a factor of 2. What is the \( y \)-intercept of \( g \)?

6. Suppose \( f(x) = 3x^2 - 10x - 8 \) and \( g(x) = 2\sqrt{x} \). Find \( \frac{g}{f} \) and its domain.

7. Suppose \( f(x) = -\frac{3}{8x} \) and \( g(x) = \frac{9}{64-16x^2} \). Find the composite \( (f \circ g)(x) \) and its domain.

8. Give two functions \( f(x) \) and \( g(x) \) such that their composite is \( (f \circ g)(x) = \frac{5\sqrt{2x-1}}{2x-1 - \sqrt{2x-1}} \)

9. Find the inverse of \( f(x) = \sqrt{3-2x} \), including the restriction on its domain.

10. Find the center and radius of the circle \( x^2 + 4x + y^2 - 6y = -1 \).

11. Write the equation of the line between the points \((-2,1)\) and \((3,5)\) in slope-intercept form.

12. Write the equation of the line perpendicular to \( 2x + y = -1 \) which passes through the point \((3,4)\).

13. Solve the inequalities:

   (a) \(-3x + 7 \geq 19\)

   (b) \(|x - 5| \leq -1\)

   (c) \(-2|x - 4| \leq -1\)
14. Determine whether the following functions are even, odd, or neither.

(a) \( f(x) = x^4 + x^2 + 3 \).
(b) \( g(x) = x^3 - 7x \).
(c) \( h(x) = x^4 + 2x^2 - x \).
(d) \( j(x) = \frac{1}{x} \).
(e) \( k(x) = |x| \).
(f) \( l(x) = x|x| \).

15. Use your knowledge of transformations to sketch graphs of each of the following functions.

(a) \( f(x) = 2(x - 1)^2 + 6 \).
(b) \( f(x) = -\sqrt{x - 3} + 2 \).
(c) \( f(x) = -(2x)^3 \).
(d) \( f(x) = \frac{1}{x - 2} + 1 \).

16. Suppose \( f \) is one-to-one and \( f(3) = 11 \). Let \( g \) be an even function and \( g(-1) = -11 \). Find \( (f^{-1} \circ g)(1) \).

17. Suppose we have two points whose midpoint is (2,1). If one point is (4,5), find the other point.