

Unit 6: Transformations of Functions

ADVANCED · SET 2

Name: _____ Date: _____

Show your work and give each answer as a single exact value (number, fraction, coordinate pair, or short word). Use plain-text notation.

1. Let $f(x) = x^2$. The graph of g is obtained from f by these steps in order: shift left 4, reflect across the x -axis, vertically stretch by factor 3, then shift up 5. Write $g(x)$ in the form $g(x) = a(x-h)^2 + k$ and give the ordered triple (a, h, k) .

Answer: _____

3. The point $(6, -8)$ lies on the graph of $y = f(x)$. Define $g(x) = f(2x)$. What are the coordinates of the corresponding point on the graph of g ? Give the ordered pair.

Answer: _____

5. Determine whether $h(x) = 5x^4 - 3x^2 + 7$ is even, odd, or neither. Answer with one word: even, odd, or neither.

Answer: _____

7. For $k(x) = x^3 + x^2$, determine whether it is even, odd, or neither. Answer with one word.

Answer: _____

9. The graph of g is obtained from $f(x) = \sqrt{x}$ by a horizontal stretch by factor 4 (away from the y -axis) then a shift down 6. Write $g(x)$ using the substitution form and evaluate $g(16)$.

Answer: _____

2. A function f satisfies $f(2) = 7$. Define $g(x) = -2 \cdot f(x - 3) + 4$. Find $g(5)$.

Answer: _____

4. The point $(-4, 10)$ lies on $y = f(x)$. Define $g(x) = (1/2) \cdot f(x + 2) - 3$. Find the coordinates of the corresponding point on g . Give the ordered pair.

Answer: _____

6. Determine whether $p(x) = 2x^5 - 4x^3 + x$ is even, odd, or neither. Answer with one word.

Answer: _____

8. Function f is odd and $f(3) = -12$. Find the value of $f(-3) + 2 \cdot f(3)$.

Answer: _____

10. Starting from $f(x) = |x|$, a transformation gives $g(x) = f(-3x + 12)$. This equals $|a(x - c)|$ for the horizontal shift; determine the x -value of the vertex of g .

Answer: _____

11. A function $g(x) = a \cdot f(b(x - h)) + k$ is applied to f . Given that f is even and $f(0) = 5$, with $a = 4$, $k = -1$, find $g(h)$.

Answer: _____

12. The point $(8, 12)$ is on $y = f(x)$. Define $g(x) = -f((x/2) + 1) + 7$ (the inside means f evaluated at $x/2 + 1$). Find the coordinates of the point on g that comes from $(8, 12)$. Give the ordered pair.

Answer: _____