

## INDIVIDUAL ASSIGNMENT 2

### Interval Drawing Problems

1. Draw the following intervals on a number line:
  - (a)  $[2, 5]$
  - (b)  $(-3, 4]$
  - (c)  $(-\infty, 2)$
  - (d)  $[1, \infty)$
2. Draw the following intervals on a number line and state whether each interval is **open**, **closed**, or **half-open**:
  - (a)  $(0, 7]$
  - (b)  $(-4, -1)$
  - (c)  $[-3, 0]$
  - (d)  $(2, \infty)$
3. Draw on a number line and determine the solution set:
  - (a)  $x \geq -2$
  - (b)  $-5 < x \leq 3$
  - (c)  $x < 1$

### Composition Function Problems

1. Given two functions  $f(x) = 2x + 3$  and  $g(x) = x^2 - 1$ , determine:
  - (a)  $(f \circ g)(x)$
  - (b)  $(g \circ f)(x)$
2. Given two functions  $f(x) = 3x - 4$  and  $g(x) = \sqrt{x + 5}$ , determine:
  - (a)  $(f \circ g)(x)$
  - (b)  $(g \circ f)(x)$
  - (c) The domain of  $(g \circ f)(x)$
3. Given the functions  $f(x) = 4x - 7$  and  $g(x) = \frac{x+7}{4}$ , prove that:
  - (a)  $(f \circ g)(x) = x$

(b)  $(g \circ f)(x) = x$

4. Given the functions  $f(x) = x^3$  and  $g(x) = \sqrt{x}$ , determine:

(a)  $(f \circ g)(x)$

(b) The domain of  $(f \circ g)(x)$

5. Given the functions  $f(x) = \frac{2x}{x+1}$  and  $g(x) = \frac{1}{x}$ , determine:

(a)  $(f \circ g)(x)$

(b) The domain of  $(f \circ g)(x)$

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Good Luck