NAME:

# Test 16 (Lessons 31–32): Polynomial Functions

**For problems 1–4, find each function. Name any restriction(s) on the domain.**

$$f(x) = \frac{1}{x-2} \qquad g(x) = 2x + 1$$

**1)** $(f \cdot g)(x)$

**2)** $[f \circ g](x)$

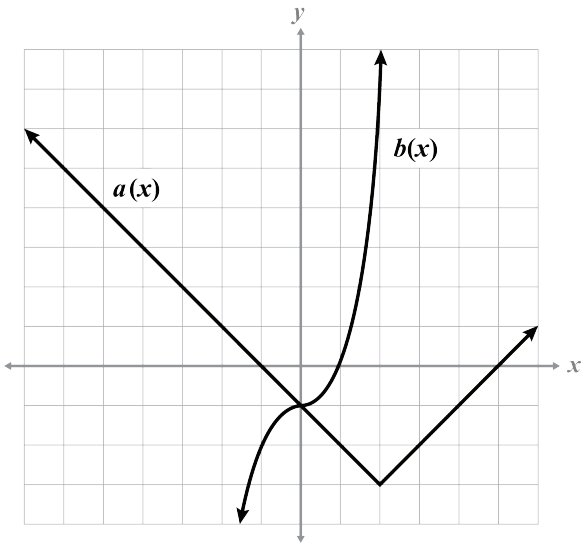
**3)** $[g \circ f](x)$

**4)** $\left(\frac{g}{f}\right)(x)$

**5)** When a stone is dropped into water the circular ripples create a wave that increases at a rate of 3 inches per second, $3t$. If $A(r) = \frac{22}{7}r^2$, what will the area of the wave be in the water after 7 seconds? (Hint: Determine $[A \circ r](t)$)

**For problems 6–8, use the graph and the functions $a(x) = |x - 2| - 3$ and $b(x) = x^3 - 1$ to evaluate.**

**6)** $(a - b)(2)$




**7)** $(a + b)(-3)$

**8)** $[b \circ a](1)$

**9)** Determine which pair of functions are inverses.

$$h(x) = \frac{1}{x+2} - 3 \qquad j(x) = -\frac{3}{x} - 2 \qquad k(x) = \frac{1}{x+3} - 2$$

**10)** Determine $c$ and $d$ when $[d \circ c] = r(x)$.

$$r(x) = \sqrt[3]{(x-1)^2} + 5$$