

Exit Ticket- Function Composition

NAME

Key

HOUR

Use the given functions to perform the indicated operations.

$$f(x) = 2x + 3$$

$$g(x) = 3x^2 + 1$$

$$h(x) = x^2 - 1$$

$$k(x) = 5x - 3$$

$$\begin{aligned} 1. f(h(x)) &= 2(x^2 - 1) + 3 \\ &= 2x^2 - 2 + 3 \\ &= 2x^2 + 1 \end{aligned}$$

$$\begin{aligned} 3. f(k(x)) &= 2(5x - 3) + 3 \\ &= 10x - 6 + 3 \\ &= 10x - 3 \end{aligned}$$

$$\begin{aligned} 5. h(k(x)) &= \frac{(5x-3)(5x-3)}{(5x-3)^2} - 1 \\ &= 25x^2 - 30x + 9 - 1 \\ &= 25x^2 - 30x + 8 \end{aligned}$$

$$\begin{aligned} 2. k(h(x)) &= 5(x^2 - 1) - 3 \\ &= 5x^2 - 5 - 3 \\ &= 5x^2 - 8 \end{aligned}$$

$$\begin{aligned} 4. f(g(x)) &= 2(3x^2 + 1) + 3 \\ &= 6x^2 + 2 + 3 \\ &= 6x^2 + 5 \end{aligned}$$

$$\begin{aligned} 6. g(f(x)) &= 3(2x + 3)^2 + 1 \\ &= 3(4x^2 + 12x + 9) + 1 \\ &= 12x^2 + 36x + 27 + 1 \\ &= 12x^2 + 36x + 28 \end{aligned}$$