

1. Consider the following functions.

$$f(x) = 6x - 2$$

$$g(x) = 3x$$

$$h(x) = 2^x + 3$$

$$p(x) = 2$$

a. Determine  $(f + g)(x)$

$$\begin{aligned} f(x) + g(x) \\ (6x - 2) + (3x) &= \boxed{9x - 2} \end{aligned}$$

b. Determine  $(f + h)(x)$

$$\begin{aligned} f(x) + h(x) \\ (6x - 2) + (2^x + 3) &= \boxed{6x + 2^x + 1} \end{aligned}$$

c. Determine  $(g - f)(x)$

$$\begin{aligned} g(x) - f(x) \\ (3x) - (6x - 2) \\ 3x - 6x + 2 &= \boxed{-3x + 2} \end{aligned}$$

d. Determine  $(p \cdot g)(x)$

$$\begin{aligned} p(x) \cdot g(x) \\ (2) \cdot (3x) &= \boxed{6x} \end{aligned}$$

e. Determine  $(f \cdot g)(2)$

$$\begin{aligned} f(2) \cdot g(2) \\ 6(2) - 2 \cdot 3(2) \\ 10 \cdot 6 &= \boxed{60} \end{aligned}$$

f. Determine  $\left(\frac{f}{g}\right)(x)$

$$\frac{f(x)}{g(x)} = \frac{6x - 2}{3x} = \boxed{\frac{6x - 2}{3x}}$$

2. Given the following partial set of values of function evaluate the following.

|      |    |    |    |   |    |
|------|----|----|----|---|----|
| x    | -1 | 0  | 1  | 2 | 3  |
| f(x) | 1  | 2  | 4  | 8 | 16 |
| g(x) | -5 | -3 | -1 | 1 | 3  |

a. Determine  $f(1) - 2 \cdot g(2)$

$$\begin{aligned} f(1) - 2 \cdot g(2) \\ (4) - 2(1) \\ 4 - 2 &= \boxed{2} \end{aligned}$$

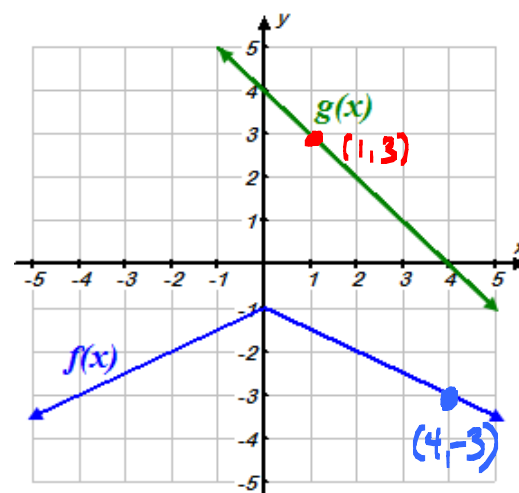
b. Determine  $(f + g)(2)$

$$\begin{aligned} &= f(2) + g(2) \\ &= (8) + (1) \\ &= \boxed{9} \end{aligned}$$

3. Given the following partial set of values of function evaluate the following.

a. Determine  $f(4) + 2 \cdot g(1)$

$$\begin{aligned} f(4) + 2 \cdot g(1) \\ (-3) + 2 \cdot (3) \\ -3 + 6 &= \boxed{3} \end{aligned}$$



4. Consider the following functions.

$$f(x) = 6x - 2$$

$$g(x) = 3x$$

$$h(x) = 2^x + 3$$

$$p(x) = 2$$

a. Determine  $(f \circ h)(1)$

$$\begin{aligned} f(h(1)) &= f(1) = 6(1) - 2 \\ &= 6 - 2 \\ &= 4 \end{aligned}$$

$h(1) = 2^1 + 3 = 2 + 3 = 5$

b. Determine  $(g \circ f)(2)$

$$\begin{aligned} g(f(2)) &= g(10) = 3(10) \\ &= 30 \end{aligned}$$

$f(2) = 6(2) - 2 = 12 - 2 = 10$

c. Determine  $(f \circ g)(x)$

$$\begin{aligned} f(g(x)) &= f(3x) = 6(3x) - 2 \\ &= 18x - 2 \end{aligned}$$

d. Determine  $(g \circ h)(x)$

$$\begin{aligned} g(h(x)) &= g(2^x + 3) = 3(2^x + 3) \\ &= 3 \cdot 2^x + 9 \end{aligned}$$

5. Given the following partial set of values of function evaluate the following.

|        |    |    |    |   |    |
|--------|----|----|----|---|----|
| $x$    | -1 | 0  | 1  | 2 | 3  |
| $f(x)$ | 1  | 2  | 4  | 8 | 16 |
| $g(x)$ | -5 | -3 | -1 | 1 | 3  |

a. Determine  $(f \circ g)(2)$

$$\begin{aligned} f(g(2)) &= f(1) = 4 \end{aligned}$$

$g(2) = 1$

b. Determine  $(g \circ f)(0)$

$$\begin{aligned} g(f(0)) &= g(2) = 1 \end{aligned}$$

$f(0) = 2$

6. Given the following partial set of values of function evaluate the following.

a. Determine  $(f \circ g)(0)$

$$\begin{aligned} f(g(0)) &= f(4) = -3 \end{aligned}$$

$g(0) = 4$

