Sebastian Campos Homework

June 30, 2022

10.1 1 to 25 odd

1 a

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

$$f(x) = 4x + 3 \qquad\qquad g(x) = 2x + 5$$

$$\begin{aligned}(f \circ g)(x) &= 4(2x + 5) + 3\\ (f \circ g)(x) &= 8x + 20 + 3\\ (f \circ g)(x) &= 8x + 23\end{aligned}$$

$$\boxed{(f \circ g)(x) = 8x + 23}$$

1 b

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

$$f(x) = 4x + 3 \qquad\qquad g(x) = 2x + 5$$

$$\begin{aligned}(g \circ f)(x) &= 2(4x + 3) + 5\\ (g \circ f)(x) &= 8x + 6 + 5\\ (g \circ f)(x) &= 8x + 11\end{aligned}$$

$$\boxed{(g \circ f)(x) = 8x + 11}$$

3 a

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

$$f(x) = 6x - 5 \qquad\qquad g(x) = 4x + 1$$

$$\begin{aligned}(f \circ g)(x) &= 6(4x + 1) - 5\\ (f \circ g)(x) &= 24x + 6 - 5\\ (f \circ g)(x) &= 24x + 1\end{aligned}$$

$$\boxed{(f \circ g)(x) = 24x + 1}$$

3 b

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

$$f(x) = 6x - 5 \qquad\qquad g(x) = 4x + 1$$

$$\begin{aligned}(g \circ f)(x) &= 4(6x - 5) + 1\\ (g \circ f)(x) &= 24x - 20 + 1\\ (g \circ f)(x) &= 24x - 19\end{aligned}$$

$$\boxed{(g \circ f)(x) = 24x - 19}$$

5 a

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

$$f(x) = 3x \qquad\qquad g(x) = 2x^2 - 3x$$

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

$$\boxed{(f \circ g)(x) = 6x^2 - 9x}$$

5 b

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

$$f(x) = 3x \qquad\qquad g(x) = 2x^2 - 3x$$

$$(g \circ f)(x) = 2(3x)^2 - 3(3x)$$
$$(g \circ f)(x) = 18x^2 - 9x$$

$$\boxed{(g \circ f)(x) = 18x^2 - 9x}$$

7 a

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

$$f(x) = 2x - 1 \qquad\qquad g(x) = x^2 + 2$$

$$(f \circ g)(x) = 2(x^2 + 2) - 1$$
$$(f \circ g)(x) = 4x^2 + 4 - 1$$
$$(f \circ g)(x) = 4x^2 + 3$$

$$\boxed{(f \circ g)(x) = 4x^2 + 3}$$

7 b

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

$$f(x) = 3x \qquad\qquad g(x) = 2x^2 - 3x$$

$$(g \circ f)(x) = 2(3x)^2 - 3(3x)$$
$$(g \circ f)(x) = 18x^2 - 9x$$

$$\boxed{(g \circ f)(x) = 18x^2 - 9x}$$