

A2 8.3 Problem Solutions.notebook

8.3 Practice Problems		
Directions: Let $f(x) = -3x^{1/3} + 4x^{1/2}$ and $g(x) = 5x^{1/3} + 4x^{1/2}$. Perform the indicated operation.		
1) $f(x) + g(x)$ $-3x^{1/3} + 4x^{1/2} + 5x^{1/3} + 4x^{1/2}$ $2x^{1/3} + 8x^{1/2}$	2) $g(x) - f(x)$ $5x^{1/3} + 4x^{1/2} - (-3x^{1/3} + 4x^{1/2})$ $5x^{1/3} + 4x^{1/2} + 3x^{1/3} - 4x^{1/2}$ $8x^{1/3}$	3) $f(x) - g(x)$ $-3x^{1/3} + 4x^{1/2} - (5x^{1/3} + 4x^{1/2})$ $-3x^{1/3} + 4x^{1/2} - 5x^{1/3} - 4x^{1/2}$ $-8x^{1/3}$
Directions: Let $f(x) = 2x^2$ and $g(x) = 5x - 4$. Perform the indicated operation.		
4) $f(x) \cdot g(x)$ $2x^2(5x - 4)$ $10x^3 - 8x^2$	5) $\frac{f(x)}{g(x)}$ $\frac{2x}{5x - 4}$	6) $f(x) - g(x)$ $2x^2 - (5x - 4)$ $2x^2 - 5x + 4$
Directions: Let $f(x) = 3x - 2$ and $g(x) = 2x + 3$. Perform the indicated operation.		
7) $f(x) \cdot g(x)$ $(3x - 2)(2x + 3)$ $6x^2 + 9x - 4x - 6$ $6x^2 + 5x - 6$	8) $g(x) - f(x)$ $2x + 3 - (3x - 2)$ $2x + 3 - 3x + 2$ $-x + 5$	9) $f(x) - g(x)$ $3x - 2 - (2x + 3)$ $3x - 2 - 2x - 3$ $x - 5$
Directions: Let $f(x) = 4x - 3$, $g(x) = -x^2$ and $h(x) = \frac{x-5}{2}$. Find the indicated value.		
10) $f(g(2))$ $g(2) = -(2)^2$ $g(2) = -4$ $f(-4) = 4(-4) - 3$ $= -16 - 3$ $= -19$	11) $g(f(2))$ $f(2) = 4(2) - 3$ $= 8 - 3$ $f(2) = 5$ $g(5) = -(5)^2$ $g(5) = -25$	12) $g(h(-3))$ $h(-3) = \frac{-3 - 5}{2}$ $= \frac{-8}{2} = -4$ $g(-4) = -(-4)^2$ $g(-4) = -16$
13) $h(f(2))$ $f(2) = 4(2) - 3$ $f(2) = 8 - 3$ $f(2) = 5$ $h(5) = \frac{5 - 5}{2} = \frac{0}{2}$ $h(5) = 0$	14) $h(g(-4))$ $g(-4) = -(-4)^2$ $g(-4) = -16$ $h(-16) = \frac{-16 - 5}{2}$ $h(-16) = \frac{-21}{2}$	15) $f(h(-8))$ $h(-8) = \frac{-8 - 5}{2} = \frac{-13}{2}$ $f(\frac{-13}{2}) = 4(\frac{-13}{2}) - 3$ $f(\frac{-13}{2}) = -26 - 3$ $f(\frac{-13}{2}) = -29$

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<p>Directions: Let $f(x) = 2x^2 - 3x$, $g(x) = 3x + 2$, and $h(x) = 2x - 9$. Find the indicated operation.</p>		
<p>16) $f(g(x))$</p> $f(g(x)) = 2(3x+2)^2 - 3(3x+2)$ $= 2(3x+2)(3x+2) - 9x - 6$ $= 2(9x^2 + 12x + 4) - 9x - 6$ $= 18x^2 + 24x + 8 - 9x - 6$ $f(g(x)) = 18x^2 + 15x + 2$	<p>17) $h(g(x))$</p> $h(g(x)) = 2(3x+2) - 9$ $= 6x + 4 - 9$ $h(g(x)) = 6x - 5$	<p>18) $g(f(x))$</p> $g(f(x)) = 3(2x^2 - 3x) + 2$ $g(f(x)) = 6x^2 - 9x + 2$
<p>Directions: Let $f(x) = x^2 - 3x$, $g(x) = 3x - 2$, and $h(x) = -x^2$. Find the indicated operation.</p>		
<p>19) $f(g(x))$</p> $f(g(x)) = (3x-2)^2 - 3(3x-2)$ $= (3x-2)(3x-2) - 9x + 6$ $= 9x^2 - 12x + 4 - 9x + 6$ $f(g(x)) = 9x^2 - 21x + 10$	<p>20) $g(f(x))$</p> $g(f(x)) = 3(x^2 - 3x) - 2$ $g(f(x)) = 3x^2 - 9x - 2$	<p>21) $f(h(x))$</p> $f(h(x)) = (-x^2)^2 - 3(-x^2)$ $f(h(x)) = x^4 + 3x^2$

