

7.5 p. 478

ex 2 $f(x) = -2x + 5$

$$f(-1) = -2(-1) + 5 \quad f(2) = -2(2) + 5$$

$$= 2 + 5$$

$$= 7$$

$$= -4 + 5$$

$$= 1$$

$$\underline{\text{ex}} \quad f(x) = -4x + 1$$

$$g(x) = 6x + 2$$

$$\text{a) } (f+g)(x)$$

$$= f(x) + g(x)$$

$$= (-4x + 1) + (6x + 2)$$

$$= -4x + 1 + 6x + 2$$

$$= \underline{-4x} + \underline{1} + \underline{6x} + \underline{2}$$

$$= \underline{2x} + \underline{3}$$

$$\text{b) } (f-g)(x)$$

$$= f(x) - g(x)$$

$$= (-4x + 1) - (6x + 2)$$

$$= -4x + 1 - 6x - 2$$

$$= -10x - 1$$

$$f(x) = x^2 - 9 \quad g(x) = 2x \quad h(x) = x - 3$$

$$\text{ex 14} \quad (f - g)(x) = (x^2 - 9) - (2x) = x^2 - 9 - 2x \\ = x^2 - 2x - 9$$

$$\text{ex 18} \quad (f + h)(x) = x^2 - 9 + x - 3 \\ = x^2 + x - 12$$

$$\text{ex 24} \quad (g + h)(1) = \underline{g(1)} + \underline{h(1)} = \underline{2(1)} + \underline{1 - 3} = 2 + 1 - 3 = 0$$

ex 32 $(fg)(x) = f(x) \cdot g(x)$ $f(x) = 3x$
 $= (3x)(6x - 8)$ $g(x) = 6x - 8$
 $= 18x^2 - 24x$

X $(3x)(6x - 8)(x)$ BBQ (food
 $18x^3 - 24x^2$ meat)

ex 36 $(fg)(x) = f(x) \cdot g(x)$ $f(x) =$
 $(3x+4)(9x^2-12x+16)$ $3x+4$
 $= 27x^3 - 36x^2 + 48x$ $g(x) =$
 $\quad + 36x^2 - 48x + 64$ $9x^2 - 12x + 16$
 $= 27x^3 + 64$

$$\begin{aligned} \underline{\text{ex 38}} \quad (fh)(x) &= f(x) \cdot h(x) \\ &= (x^2 - 9)(x - 3) \\ &= x^3 - 3x^2 - 9x + 27 \end{aligned}$$

$$f(x) = x^2 - 9$$

$$h(x) = x - 3$$

$$f(x) = x^2 - 9 \quad g(x) = 2x \quad h(x) = x - 3$$

ex 56 $\left(\frac{f}{h}\right)(x) = \frac{f(x)}{h(x)} = \frac{x^2 - 9}{x - 3}$

$$= \frac{\cancel{(x-3)}(x+3)}{\cancel{x-3}} = x + 3$$

x	
$x^2 - 9$	$\begin{array}{r} 1 \quad 1 \quad 1 \\ \hline 2 \quad 4 \quad 7 \\ \hline 2 \quad 1 \quad 8 \\ 3 \quad 2 \\ 1 \end{array}$
<hr style="width: 50%; margin: 0 auto;"/>	
$x - 3$	
$\begin{array}{r} 1 \quad \quad 1 \end{array}$	

$$f(x) = x^2 - 9 \quad g(x) = 2x \quad h(x) = x - 3$$

$$\underline{\text{ex 60}} \quad \left(\frac{g}{h} \right)(x) = \frac{g(x)}{h(x)} = \frac{2x}{x-3}$$

$$\underline{\text{ex 62}} \quad \left(\frac{g}{h} \right)(-1) = \frac{g(-1)}{h(-1)} = \frac{2(-1)}{-1-3} = \frac{-2}{-4} = \frac{1}{2}$$

$$(f \overset{\text{composition}}{\circ} g)(x) = f(g(x))$$

iron (dryer (washer (clothes)))

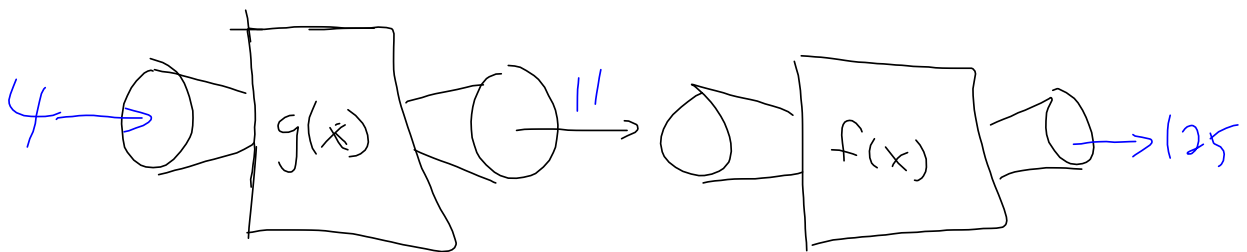
brewer (grinder (beans))

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

ex 68 $(f \circ g)(4) = f(g(4)) = f(11) = 125$

$$g(4) = \underline{2(4) + 3} = \underline{11}$$

$$f(11) = 11^2 + 4 = 121 + 4 = 125$$



$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

$$\underline{\text{ex 70}} \quad (h \circ f)(6) = h(\underline{f(6)}) = h(\underline{40}) = 35$$

$$\begin{aligned} f(6) &= 6^2 + 4 \\ &= 36 + 4 \\ &= 40 \end{aligned}$$

$$\begin{aligned} h(40) &= 40 - 5 \\ &= 35 \end{aligned}$$

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

$$\underline{\text{ex 72}} \quad (h \circ g)(-2) = h(\underline{g(-2)}) = h(-1) \quad \searrow$$

$$g(-2) = 2(-2) + 3$$

$$= -4 + 3$$

$$= -1$$

$$h(-1) = -1 - 5 = -6$$

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

ex 74

$$\begin{aligned} (f \circ h)(0) &= f(h(0)) = f(-5) \\ &= (-5)^2 + 4 \\ &= 25 + 4 \\ &= 29 \end{aligned}$$
$$h(0) = 0 - 5 = -5$$

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

ex 76

$$\begin{aligned}(g \circ h)(x) &= g(h(x)) \\ &= g(\underline{x-5}) \\ &= 2(\underline{x-5}) + 3 \\ &= 2x - 10 + 3 \\ &= 2x - 7\end{aligned}$$

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

ex 78

$$\begin{aligned} (h \circ f)(x) &= h(f(x)) \\ &= h(x^2 + 4) \\ &= (x^2 + 4) - 5 \\ &= x^2 - 1 \end{aligned}$$

$$(h \circ f)(m)$$

$$h(f(m))$$

$$h(m^2 + 4)$$

$$(m^2 + 4) - 5$$

$$m^2 - 1$$

$$f(x) = x^2 + 4 \quad g(x) = 2x + 3 \quad h(x) = x - 5$$

ex 80 $(h \circ f)\left(\frac{1}{2}\right) = h\left(f\left(\frac{1}{2}\right)\right)$ ex 78
 $h(f(x))$

$$= h\left(\left(\frac{1}{2}\right)^2 + 4\right) = x^2 - 1$$

$$= h\left(\frac{1}{4} + 4\right) \rightarrow \left(\frac{1}{2}\right)^2 - 1$$

$$= h\left(4\frac{1}{4}\right) = \frac{1}{4} - 1$$

$$= 4\frac{1}{4} - 5 = -\frac{3}{4} \leftarrow -\frac{3}{4}$$

