

Update!

March 7, 2016 will be notes over 10.1-10.2

March 9, 2016 will be our test over chapter 9

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9.2 p. 619

exb

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

"f of x"

"g of x"

$$g(0) = -1 \cdot 0^2 + 4 \cdot 0 + 1$$

$$= -1 \cdot 0 + 4 \cdot 0 + 1$$

$$= 0 + 0 + 1$$

$$= 1$$

$$g(0) = 1$$

$$(0, 1)$$

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$$g(x) = -x^2 + 4x + 1$$

ex 10

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

ex 12

$$\begin{aligned} g(10) &= -1 \cdot 10^2 + 4 \cdot 10 + 1 \\ &= -1 \cdot 100 + 4 \cdot 10 + 1 \\ &= -100 + 40 + 1 \\ &= -59 \end{aligned}$$

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$$f(x) = -3x + 4$$

ex 14

$$\begin{aligned} f(-100) &= -3(-100) + 4 \\ &= 300 + 4 \\ &= 304 \end{aligned}$$

ex 16

$$\begin{aligned} f\left(\frac{7}{3}\right) &= -3\left(\frac{7}{3}\right) + 4 \\ &= -7 + 4 \\ &= -3 \end{aligned} \quad \left(\frac{7}{3}, -3\right)$$

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$$\begin{aligned}
 \underline{\text{ex 18}} \quad g(1.5) &= -1 \cdot 1.5^2 + 4 \cdot 1.5 + 1 \\
 &= -1 \cdot 2.25 + 4 \cdot 1.5 + 1 \\
 &= -2.25 + 6 + 1 \\
 &= 4.75
 \end{aligned}$$

$$\begin{aligned}
 \underline{\text{ex 20}} \quad g(k) &= -k^2 + 4k + 1 \\
 &\quad (k, -k^2 + 4k + 1)
 \end{aligned}$$

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$$\begin{aligned}
 \underline{\text{ex 22}} \quad g(-x) &= -1 \cdot (-x)^2 + 4(-x) + 1 \\
 &= -x^2 - 4x + 1
 \end{aligned}$$

$$-1 \cdot (-x)(-x)$$

$$f(x) = -3x + 4$$

$$\begin{aligned}
 \underline{\text{ex 24}} \quad f(x-2) &= -3(x-2) + 4 \\
 &= -3x + 6 + 4 \\
 &= -3x + 10
 \end{aligned}$$

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ex 30 $f(a+b) = -3(a+b) + 4$
 $= -3a - 3b + 4$

ex 32 $g\left(\frac{1}{x}\right) = -1 \cdot \left(\frac{1}{x}\right)^2 + 4\left(\frac{1}{x}\right) + 1$
 $= -\frac{1}{x^2} + \frac{4}{x} + 1$

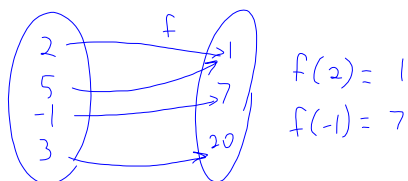
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Find $f(2)$ and find $f(-1)$

ex 34 $f = \{(-1, -5), (0, 5), (2, -5)\}$

$f(2) = -5$ $f(-1) = -5$

ex 38



$f(2) = 1$
 $f(-1) = 7$

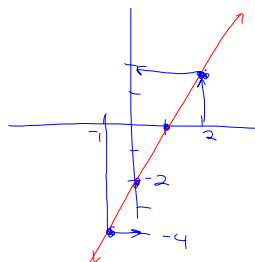
ex 40

x	y = f(x)
8	6
5	3
2	0
-1	-3
-4	-6

$f(2) = 0$

$f(-1) = -3$

ex 42



$f(2) = 2$

$f(-1) = -4$

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ex 48

$$x - 4y = 8$$

$$\begin{array}{r} -x \\ -x \end{array}$$

$$\frac{-4y}{-4} = \frac{8-x}{-4}$$

$$y = -2 + \frac{x}{4}$$

$$f(x) = -2 + \frac{x}{4}$$

$$f(3) = -2 + \frac{3}{4}$$

$$= \frac{-8}{4} + \frac{3}{4}$$

$$= \frac{-5}{4}$$

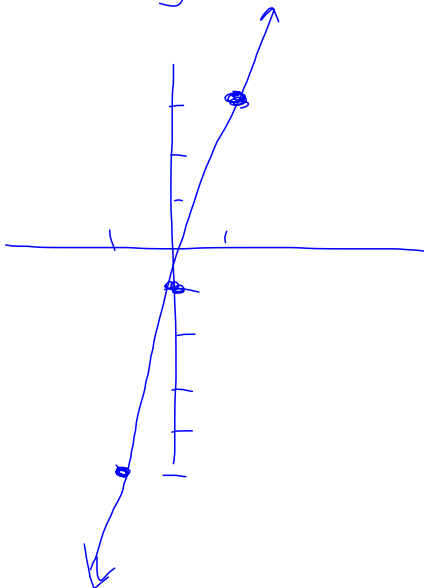
solve for y
write as f(x)
find f(3)

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ex 54

$$g(x) = 4x - 1 \rightarrow y = 4x - 1$$

$$m = \frac{4}{1}$$

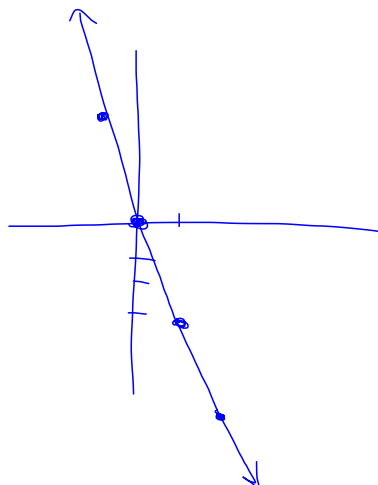


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ex 58

$$H(x) = -3x \rightarrow y = -3x + 0$$

$$m = -\frac{3}{1}$$

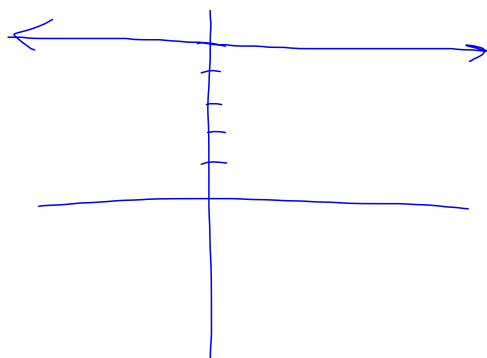


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ex 60

$$f(x) = 5 \rightarrow y = 5$$

$$m = 0$$



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ex 68

a) $f(x) = 150 + 0.50x$

b) $f(250) = 150 + .5(250)$
 $= 150 + 125$
 $= 275$

When $x = 250$ miles, the cost, $f(x)$, is \$275.

c) $f(x) = 400$

$$\begin{array}{r} 150 + .5x = 400 \\ -150 \qquad \qquad -150 \\ \hline \end{array}$$

$$\begin{array}{r} .5x = 250 \\ \hline .5 \qquad \qquad .5 \end{array}$$

$x = 500$

You could go 500 miles for \$400

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9.3 p. 629

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

b) $(f-g)(x)$

ex 16

$f(x) = -4x + 1$

$g(x) = 6x + 2$

a) $(f+g)(x) = f(x) + g(x)$
 $= \underline{-4x+1} + \underline{6x+2}$
 $= 2x + 3$

b) $(f-g)(x) = f(x) - g(x)$
 $= -4x + 1 - (6x + 2)$
 $= -4x + 1 - 6x - 2$
 $= -10x - 1$

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

$$\text{ex 22 } (f \ominus g)(x) = \underline{x^2 - 9} \ominus \underline{2x} = x^2 - 2x - 9$$

$$\text{ex 26 } (f \oplus h)(x) = x^2 - 9 \oplus x - 3 = x^2 + x - 12$$

$$\begin{aligned} \text{ex 30 } (g - h)(10) &= g(10) - h(10) \\ &= 2(10) - (10 - 3) \\ &= 20 - 7 \\ &= 13 \end{aligned}$$

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$$\begin{aligned} \text{ex 32 } (g + h)(1) &= g(1) + h(1) \\ &= 2 \cdot 1 + 1 - 3 \\ &= 2 + 1 - 3 \\ &= 0 \end{aligned}$$

$$\begin{aligned} \text{ex 34 } (g + h)\left(\frac{1}{3}\right) &= g\left(\frac{1}{3}\right) + h\left(\frac{1}{3}\right) \\ &= 2\left(\frac{1}{3}\right) + \frac{1}{3} - 3 \\ &= \frac{2}{3} + \frac{1}{3} - 3 \\ &= -2 \end{aligned}$$

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$$\begin{aligned}
 \text{ex 46} \quad (fh)(x) &= f(x) \cdot h(x) \\
 &= (x^2 - 9)(x - 3) \\
 &= x^3 - 3x^2 - 9x + 27 \quad \leftarrow \begin{array}{l} \text{eval.} \\ \text{when} \\ x=1 \end{array}
 \end{aligned}$$

$$\begin{aligned}
 \text{ex 48} \quad (fh)(1) &= f(1) \cdot h(1) \\
 &= (1^2 - 9)(1 - 3) \\
 &= (-8)(-2) \\
 &= 16
 \end{aligned}$$

$1^3 - 3 \cdot 1^2 - 9 \cdot 1 + 27$
 $1 - 3 - 9 + 27$
 $\cdot 16$

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$$\begin{aligned}
 \text{ex 52} \quad (fg)(-2) &= f(-2) \cdot g(-2) \\
 &= ((-2)^2 - 9)(2(-2)) \\
 &= (4 - 9)(-4) \\
 &= (-5)(-4) \\
 &= 20
 \end{aligned}$$

$$\begin{aligned}
 \text{ex 54} \quad (fg)\left(-\frac{1}{3}\right) &= f\left(-\frac{1}{3}\right) \cdot g\left(-\frac{1}{3}\right) \\
 &= \left[\left(-\frac{1}{3}\right)^2 - 9\right] \left[2\left(-\frac{1}{3}\right)\right] \\
 &= \left[\frac{1}{9} - 9\right] \left[-\frac{2}{3}\right] \\
 &= \left[\frac{1}{9} - \frac{81}{9}\right] \left[-\frac{2}{3}\right] \\
 &= \left[-\frac{80}{9}\right] \left[-\frac{2}{3}\right] = \frac{160}{27}
 \end{aligned}$$

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$$\begin{aligned} \text{ex 64} \quad \left(\frac{f}{h}\right)(x) &= \frac{f(x)}{h(x)} = \frac{x^2 - 9}{x - 3} \leftarrow (x \neq 3) \\ &= \frac{(x+3)(\cancel{x-3})}{\cancel{x-3}} = (x+3) \end{aligned}$$

$$\text{ex 66} \quad \left(\frac{f}{h}\right)(1) = \frac{f(1)}{h(1)} = \frac{1^2 - 9}{1 - 3} = \frac{-8}{-2} = 4$$

$$\text{ex 68} \quad \left(\frac{g}{h}\right)(x) = \frac{g(x)}{h(x)} = \left(\frac{2x}{x-3}\right) \quad (x \neq 3)$$

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

$$\begin{aligned} \text{ex 80} \quad (f \circ g)(4) &= f(\underline{g(4)}) \\ \text{Composed} &= f(2 \cdot 4 + 3) \\ &= f(11) \\ &= 11^2 + 4 \\ &= 121 + 4 \\ &= 125 \end{aligned}$$

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ex 88

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

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