1.7 Homework

9) $0.60x$

12) $2800(1.09) + \$19.85x$

15) $V = 2\pi r^3$

18) $A = s^2$

21) $y = 124$
$x = 496$

27) \$19.80 \$33 shirt
\$20.25

32) 15 of 20%
10 of 35%

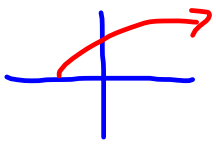
36) 12 x 15

39) 11.42 mph

No Calc:
42) F
43) C
44) A

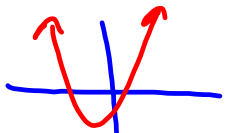
45) B
46) E

1) $y = \sqrt{x+2}$



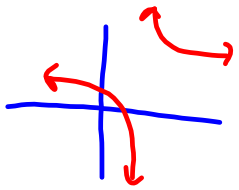
YES

$y = 3x^2 + 5x - 1$

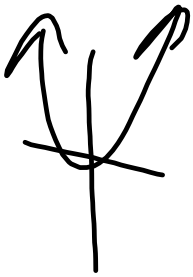


NO

$y = \frac{5x-1}{2x-3}$



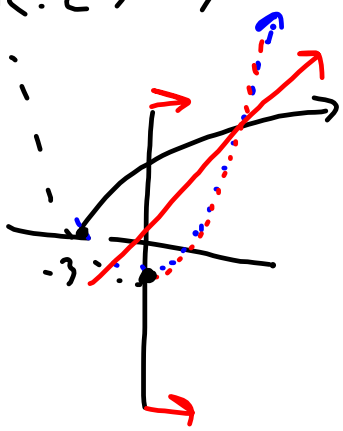
YES



Passes both horizontal / vertical line test

2) $f(x) = 2\sqrt{x+3}$

ORIG
D: $[-3, \infty)$
R: $[0, \infty)$



$f^{-1}(x) =$

$x = 2\sqrt{y+3}$

$\frac{x}{2} = \sqrt{y+3}$

$\frac{x^2}{4} = y+3$

$y = \frac{x^2}{4} - 3$

INV
D: $[0, \infty)$
R: $[-3, \infty)$

Roots → Restrictions

3) $f(x) = \frac{1}{4}x - 3$ $g(x) = 4x + 12$

$f(g(x)) = \frac{1}{4}(4x+12) - 3$

$= x + 3 - 3$

$= x$

$g(f(x)) = 4\left(\frac{1}{4}x - 3\right) + 12$

$= x - 12 + 12$

$= x$

4) a) $(f \circ g)(x) = \frac{1}{2x-5+3} = \frac{1}{2x-2}$

$2x-2=0$, $2x=2$, $x \neq 1$

D: $(-\infty,1) \cup (1,\infty)$

b) $g(g(x)) = 2(2x-5)-5$

$= 4x-10-5$

$= 4x-15$ D: $(-\infty,\infty)$

c) $\left(\frac{g}{f}\right)(x) = \frac{2x-5}{\frac{1}{x+3}}$ D: $(-\infty,-3) \cup (-3,\infty)$

$= (2x-5)(x+3)$

$= 2x^2+6x-5x-15$

$= 2x^2+x-15$

d) $(g \circ f)(-2) =$

$f(-2) = \frac{1}{-2+3}$

$= \frac{1}{1}$

$= 1$

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

$= 2-5$

$= -3$

$\frac{2x-5}{\frac{1}{x+3}}$ $\frac{(2x-5)(x+3)}{1} =$

5) $y = x^2$

$y = 4x^2$

$= -4(x-3)^2 + 2$

6) $y = |x+3|$ $y = |-x-2| + 4$

reflect y-axis

4 units up

5 units right

X's lie so you always know Y

7) $g(f(x)) = \frac{5}{x+3}$ $g(x) = \frac{5}{x}$

Ex 1 $f(x) = x+3$

Ex 2 $g(f(x)) = \frac{(x+3)^2}{5}$ $g(x) = \frac{x^2}{5}$ $f(x) = x+3$

8) $f(x) = 3x^4 + 2x - 7$

$f(-x) = 3(-x)^4 + 2(-x) - 7$ reflect y

$= 3x^4 - 2x - 7$

$-f(x) = -3x^4 - 2x + 7$ reflect x

9) $.3x + .1(10-x) = 10(.15)$

$.3(10-x) + .1x = 10(.15)$

$.3x + 1 - .1x = 1.5$

$.2x = .5$

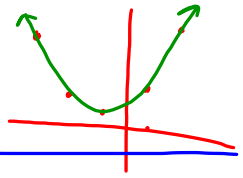
$x = 2.5$ gall

30%

10
- 2.5
7.5 gall 10%

10) $x = 3t - 2$ $t \quad -2 \le t \le 2$

$y = t^2 + 1$



t	x	y
-2	-8	5
-1	-5	2
0	-2	1
1	1	2
2	4	5

b) $x = 3t - 2$

$\frac{x}{3} + \frac{2}{3} = \frac{3t}{3}$

$t = \frac{x+2}{3}$

$y = \left(\frac{x+2}{3}\right)^2 + 1$

$= \frac{(x+2)^2}{3^2} + 1$

$= \frac{x^2+4x+4}{9} + 1$

$= \frac{x^2}{9} + \frac{4x}{9} + \frac{4}{9} + 1\frac{9}{9}$

$= \frac{x^2}{9} + \frac{4x}{9} + \frac{13}{9}$

$\frac{x^2+4x+13}{9}$