

Algebra 2 Assignment 39 Key

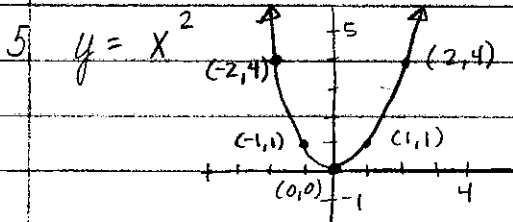
NEW

1.  $g(x) = (x-3)^3$  | moves 3 to the right

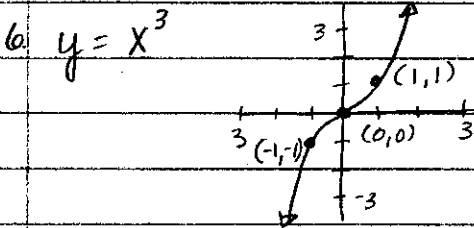
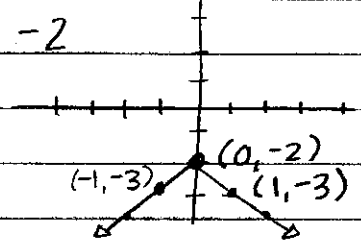
2.  $h(x) = (x+2)^3 - 4$  | moves left 2, then down 4

3.  $y = |x| + 2$  | moves up 2

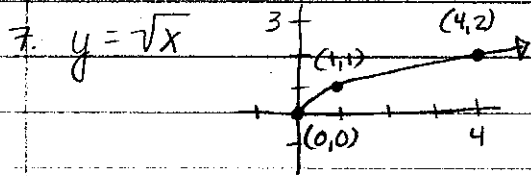
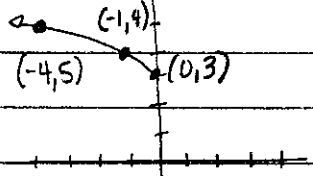
4.  $y = -|x+2| + 3$  | moves left 2, reflects over x-axis, up 3



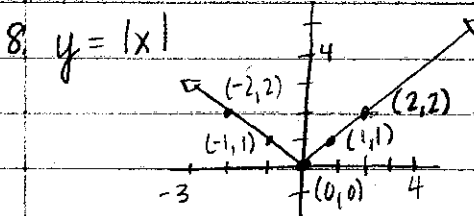
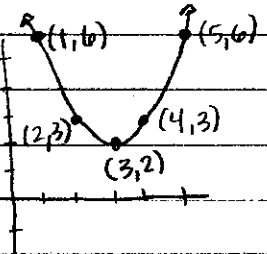
10.  $y = -|x| - 2$



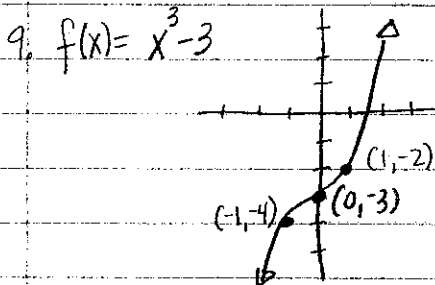
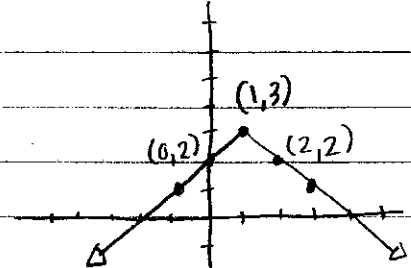
11.  $g(x) = \sqrt{x} + 3$



12.  $y = (x-3)^2 + 2$



13.  $f(x) = -|x-1| + 3$

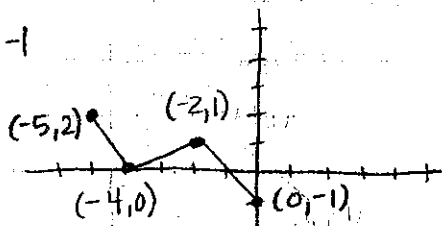


14.  $y = (x+1)^2 - 3$

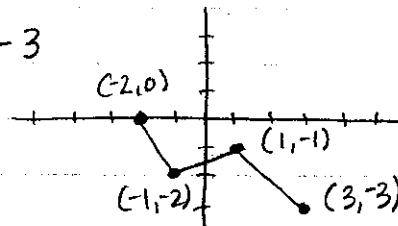
15.  $y = \sqrt{x+3}$

16.  $y = -|x+2| + 1$

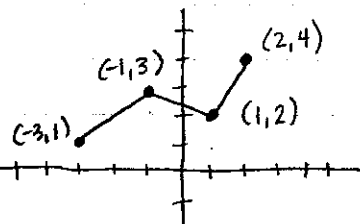
17.  $f(x+3) - 1$



18.  $f(x) - 3$



19.  $f(-x) + 1$



**REVIEW**

20.  $(\frac{1}{8})^{-1/3} = (\frac{8}{1})^{1/3} = 8^{1/3} = \sqrt[3]{8} = 2$

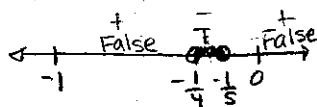
21.  $4a^2 + 3a - 2 = 0$

$a = \frac{-3 \pm \sqrt{9 - 4(4)(-2)}}{2(4)} = \frac{-3 \pm \sqrt{9 + 32}}{8} = \frac{-3 \pm \sqrt{41}}{8}$

22.  $20x^2 + 9x + 1 < 0$

$(5x+1)(4x+1) < 0$

$5x+1=0 \quad 4x+1=0$   
 $x = -1/5 \quad x = -1/4$



$-\frac{1}{4} < x < -\frac{1}{5}$   
 or  $-0.25 < x < -0.2$

23.  $x = y^2$

Not a function (exponent on y)

24.  $y = \sqrt{x+5}$  function

25.  $f(x) = 2x - 3$

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

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

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

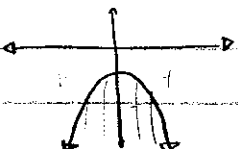
$(fg)(x) = (2x - 3)(x^2 - 1) = 2x^3 - 3x^2 - 2x + 3$

$(\frac{f}{g})(x) = \frac{2x-3}{x^2-1}$

Asmt 39 - continued

26.  $x^2 - 16x + 4 = 0$   $x = .254, 15.746$

27.  $\frac{-3x^2}{-5} \geq \frac{5}{-5}$   
 $-3x^2 - 5 \geq 0$  No Solution



28.  $g(x) = 3x + 7$  Domain:  $\mathbb{R}$   
Range:  $\mathbb{R}$

29.  $h(x) = \sqrt{x+3}$  Domain:  $x \geq -3$   
Range:  $y \geq 0$

30.  $f(x) = 3 - 2x - 4x^2$  Domain:  $\mathbb{R}$   
Range:  $y \leq 3.25$

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20.  $\frac{-4ab}{2a} \cdot \frac{14c^2}{22a^2} = \frac{-4bc}{33a}$

28.  $\frac{x^2 + 7x + 10}{x+2} = \frac{x^2 + 7x + 10}{x+2} \cdot \frac{(x+2)}{x^2 + 2x - 15} = \frac{(x+5)(x+2)}{(x+5)(x-3)} = \frac{x+2}{x-3}$

30.  $\frac{x+2}{x-5} + 6 = \frac{x+2}{x-5} + \frac{6(x-5)}{x-5} = \frac{x+2+6x-30}{x-5} = \frac{7x-28}{x-5}$

34.  $\frac{3 \cdot \frac{1}{5}}{4b} - \frac{2 \cdot \frac{1}{4}}{5b} - \frac{1 \cdot \frac{1}{10}}{2b} = \frac{15}{20b} - \frac{8}{20b} - \frac{10}{20b} = \frac{-3}{20b}$

35.  $\frac{m+3}{m^2 - 6m + 9} - \frac{8m-24}{9-m^2} = \frac{(m+3)^{(m+3)}}{(m-3)(m-3)^{(m+3)}} + \frac{(8m-24)^{(m-3)}}{(m+3)(m-3)^{(m-3)}}$   
 $= \frac{m^2 + 6m + 9 + 8m^2 - 48m + 72}{(m+3)(m-3)(m-3)} = \frac{9m^2 - 42m + 81}{(m+3)(m-3)^2}$

page 898 (9-4)

$$7. \frac{\frac{1}{x+y}}{\frac{1}{x} + \frac{1}{y}} = \frac{\frac{1}{x+y}}{\frac{y+x}{xy}} = \frac{1}{x+y} = \frac{1}{(x+y)} \cdot \frac{xy}{(x+y)} = \boxed{\frac{xy}{(x+y)^2}}$$

page 898 (9-5)

$$0. \frac{3x}{x^2+2x-8} = \frac{1(x+4)}{(x-2)(x+4)} + \frac{x(x-2)}{(x+4)(x-2)} \rightarrow \frac{3x}{(x-2)(x+4)} = \frac{x+4+x^2-2x}{(x-2)(x+4)} \quad D: x \neq 2, -4$$

$$\rightarrow \frac{3x}{-3x} = \frac{x^2-x+4}{-3x} \rightarrow 0 = x^2-4x+4 \rightarrow 0 = (x-2)(x-2)$$

Restricted Domain!  $x \neq 2$  No Solution

$$11. \frac{5x+2}{x^2-4} = \frac{5x}{(x+2)(x-2)} + \frac{2}{(x-2)} \rightarrow \frac{5x+2}{(x+2)(x-2)} = \frac{5x(x+2)+2(x-2)}{(x+2)(x-2)} \quad D: x \neq 2, -2$$

$$\rightarrow \frac{5x+2}{-5x-2} = \frac{5x^2+10x+2x-4}{-5x-2}$$

$$0 = 5x^2+7x-6 \rightarrow 0 = (5x-3)(x+2) \begin{matrix} \nearrow 5x-3=0 \\ \nearrow 5x=3 \end{matrix}$$

$$\boxed{x = \frac{3}{5}}$$

$$2. \frac{1(x+3)}{(x-3)(x+3)} + \frac{2}{x^2-9} = \frac{5(x-3)}{(x+3)(x-3)} \rightarrow \frac{x+3+2}{-x-5} = \frac{5x-15}{-x-5}$$

D:  $x \neq 3, -3$

$$0 = 4x-20 = 4(x-5)$$

$$x-5=0 \rightarrow \boxed{x=5}$$

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

D:  $x \neq 1, -1, -2$

$$\boxed{0=x}$$

Asmt 39 - continued

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10.  $f(x) = x^2 + 3$

$g(x) = x + 1$

$(f \circ g)(2) = ((2) + 1)^2 + 3 = 9 + 3 = \boxed{12}$

$(g \circ f)(2) = ((2)^2 + 3) + 1 = 7 + 1 = \boxed{8}$

12.  $g(x) = x + 2$

$h(x) = x^2$

$g(h(x)) = \boxed{x^2 + 2}$

$h(g(x)) = (x + 2)^2 = \boxed{x^2 + 4x + 4}$

32.  $f(x) = x^2$ ,  $g(x) = 4x$

$(f \circ g)(4) = (4(4))^2 = 16^2 = \boxed{256}$

38.  $f(x) = x^2$ ,  $g(x) = 4x$

$(f \circ g)(x) = (4x)^2 = \boxed{16x^2}$

