

Test 1 Key Form A

1. a)  $x^2 - 16 = 0$   
 $(x-4)(x+4) = 0$   
 $x \neq 4, x \neq -4$

② no work  
 Domain: all reals except  $\pm 4, -\pm 4$   
 OR  
 $(-\infty, -4) \cup (-4, 4) \cup (4, \infty)$

b)  $5x - 15 \geq 0$   
 $5x \geq 15$   
 $x \geq 3$  (4)

Domain: all reals except greater than equal to 3  
 (2)  $[3, \infty)$

2. a)  $[-4, 3]$

d)  $(-4, -2)$

b)  $(-2, 2)$  or  $x = -2$

$(0, 3)$

c)  $(0, -1)$

e) 0

3.  $f(2) = \frac{2+3}{2-5} = \frac{-5}{3}$ . The point  $(2, 3)$  is not on the graph because  $(2, -5/3)$  is.

4. a)  $\frac{f(x+h) - f(x)}{h} = \frac{(x+h)^2 - 3(x+h) + 4 - f(x)}{h} = \frac{x^2 + 2xh + h^2 - 3x - 3h + 4 - x^2 + 3x - 4}{h}$   
 $= \frac{2xh + h^2 - 3h}{h} = \frac{h(2x + h - 3)}{h} = 2x + h - 3 = msec$

b)  $msec = 2(1) + .5 - 3 = -.5$

c)  $y - y_1 = m(x - x_1)$       $f(1) = 1 - 3 + 4 = 2$       $(1, 2)$  on secant line  
 $y - 2 = -.5(x - 1)$   
 $y = -.5x + .5 + 2 = -.5x + 2.5$

5. a)  $S(p) = D(p)$       $-200 + 50p = 1000 - 25p$   
 $75p = 1200$   
 $p = 1200/75 = 16$

b)  $D(1200/75 = 16) = 1000 - 25 \left( \frac{1200}{75} \right) = 1000 - 400 = 600$

b. a)  $f(0) = |0| \Rightarrow (0, 0)$

b)  $f(-5)$  undefined

c)  $f(1) = 4$

$$7. f(x) = \sqrt{x} \rightarrow y = f(x) = -\sqrt{x} \rightarrow \overset{y = -f(x-2)}{\cancel{f(x)}} = -\sqrt{x-2}$$

8. Reflection about y axis

Horizontal compression by a factor of  $1/2$

Shift down 4 units

$$9. 5x^4(x-2)^2 [2x + x - 2] = 5x^4(x-2)^2 [3x - 2]$$