

Test 2 Key Form B

1. a) $x^2 - 9 = 0$
 $(x-3)(x+3) = 0$
 $x=3, x=-3$

Domain: all reals except 3, -3
 $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$

b) $4x - 8 \geq 0$
 $4x \geq 8$
 $x \geq 2$

Domain: all reals greater than or equal to 2
 $[2, \infty)$

2. a) $[-5, 4]$ 4
 b) $x=1$ $(1, 3)$ 3
 c) $(0, 2)$ 3

d) $[-5, -2] \cup (1, 4)$

e) $f(1) = 3$

3. $f(3) = \frac{3-2}{3+1} = \frac{1}{4}$. $(3, 1)$ is not on the graph of $f(x)$, because $(3, \frac{1}{4})$ is on the graph. Explanation

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

b) $m_{sec} = 2(1) + .5 - 2 = .5$

c) $f(1) = 1 - 2 + 3 = 2$ $(1, 2)$

$y - y_1 = m(x - x_1)$

$y - 2 = .5(x - 1)$

$y = .5x - .5 + 2$

$y = .5x + 1.5$

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

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

$$7. f(x) = \sqrt{x} \rightarrow y = -f(x) = -\sqrt{x} \rightarrow y = -f(x+\cancel{4}) = -\sqrt{x+\cancel{4}}$$

8. Reflection about y axis

Horizontal stretch by a factor of 3

Shift up 5 units

$$9. 8x^6(x+3)^2 + 2x^5(x+3)^3$$

$$= 2x^5(x+3)^2(4x+x+3)$$

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