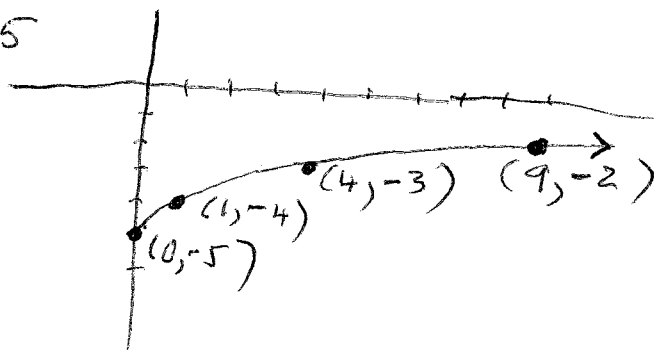


Test 2 Key

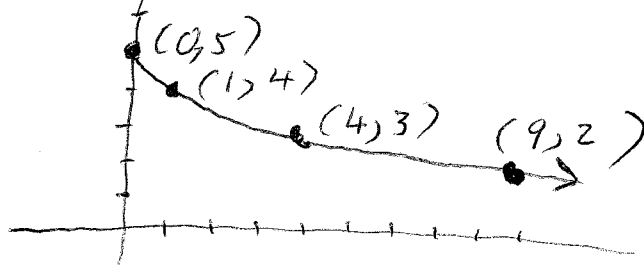
① a) $\sqrt{x} - 5$

x	y
0	-5
1	-4
4	-3
9	-2



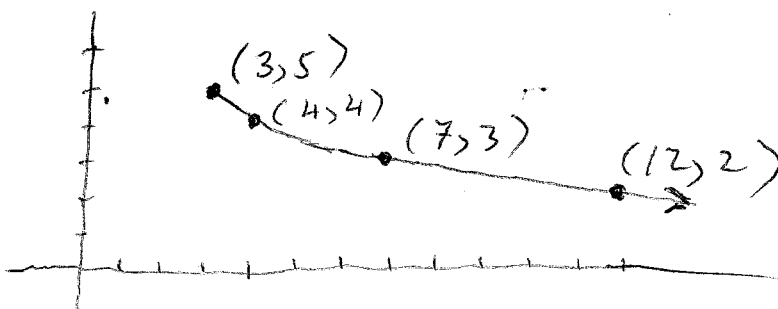
b) $-(\sqrt{x} - 5) = -\sqrt{x} + 5$

x	y
0	5
1	4
4	3
9	2



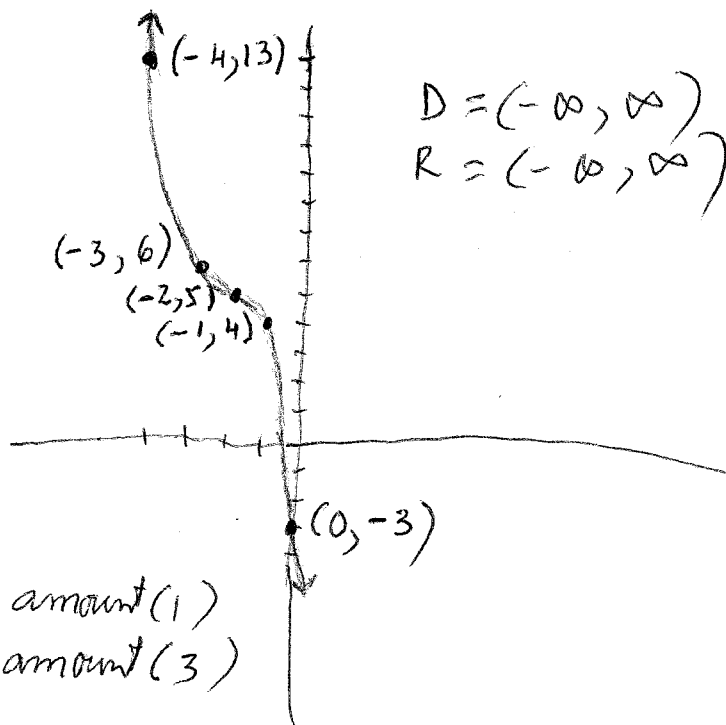
c) $-\sqrt{x-3} + 5$

x	y
3	5
4	4
7	3
12	2



② $y = -(x+2)^3 + 5$

x	y
-4	13
-3	6
-2	5
-1	4
0	-3
1	-22



$D = (-\infty, \infty)$
 $R = (-\infty, \infty)$

③ Linear because

x increases by some amount (1)

y increases by some amount (3)

$m = \frac{4-1}{2-1} = 3$. So $y = 3x - 2$

from (0, -2)

$$(4) a) -300 + 50p = 960 - 55p$$

$$105p = 1260$$

$$p = \frac{1260}{105} = 12 \text{ ¢}$$

$$b) \begin{array}{c} D > S \\ \text{ } \end{array} \quad \begin{array}{c} S(p) \\ \text{ } \end{array}$$

$$(12, 300)$$

$$0 \leq p \leq 12$$

$$-300 + 50(12) = 300 \text{ T-shirts}$$

c) price will increase

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

$$\text{zeros: } x = -\frac{2}{3} \quad x = 3$$

$$x\text{-int: } (-\frac{2}{3}, 0) \quad (3, 0)$$

$$(7) 8x^2 + 4x - 3 = 0$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(8)(-3)}}{2(8)}$$

$$= \frac{-4 \pm \sqrt{16 + 96}}{16}$$

$$= \frac{-4 \pm \sqrt{112}}{16} = \frac{-4 \pm 4\sqrt{7}}{16}$$

$$= \frac{-1 \pm \sqrt{7}}{4} \text{ zeros}$$

$$x\text{-int: } (\frac{-1 \pm \sqrt{7}}{4}, 0)$$

$$(8) -3x^2 + 10 = 7x + 12$$

$$3x^2 + 7x + 2 = 0$$

$$(3x+1)(x+2) = 0$$

$$x = -\frac{1}{3} \quad x = -2$$

$$(6) 2x^2 + x - \frac{1}{4} = 0$$

$$2(x^2 + \frac{1}{2}x + \frac{1}{16}) - \frac{1}{8} - \frac{1}{4} = 0$$

$$2(x + \frac{1}{4})^2 - \frac{3}{8} = 0$$

$$(x + \frac{1}{4})^2 = \frac{3}{16}$$

$$x + \frac{1}{4} = \pm \frac{\sqrt{3}}{4}$$

$$x = -\frac{1}{4} \pm \frac{\sqrt{3}}{4}$$

$$\text{zeros } x = \frac{-1 \pm \sqrt{3}}{4}$$

$$x\text{-int: } (\frac{-1 \pm \sqrt{3}}{4}, 0)$$

$$\begin{array}{l} \nearrow x = -\frac{1}{3} \\ y = -3(-\frac{1}{3})^2 + 10 \\ = -\frac{1}{3} + 10 = \frac{29}{3} \end{array}$$

$$(-\frac{1}{3}, \frac{29}{3})$$

$$\begin{array}{l} x = -2 \\ y = -3(-2)^2 + 10 \\ = -12 + 10 \\ = -2 \end{array}$$

$$(-2, -2)$$

$$(9) |3t-2| \leq 6$$

$$-6 \leq 3t-2 \leq 6$$

$$-4 \leq 3t \leq 8$$

$$-\frac{4}{3} \leq t \leq \frac{8}{3}$$

$$(10) \text{ min. because } a=2 > 0$$

$$x = -\frac{b}{2a} = -\frac{20}{2(2)} = -5$$

$$f(-5) = 2(-5)^2 + 20(-5) - 5$$

$$= 50 - 100 - 5 = -55$$

$$(11) a) -16t^2 + 48t + 160 = 0$$

$$-16(t^2 - 3t - 10) = 0$$

$$-16(t-5)(t+2) = 0$$

$$t = 5 \text{ seconds}$$

← answer

$$\text{min} = -55$$

$t = -2$ cannot be negative

$$b) -16t^2 + 48t + 160 = 160$$

$$\cancel{-16t^2 + 48t + 160} \quad -16t(t-3) = 0$$

$$t=0 \quad t=3 \text{ seconds}$$

← answer

$$(12) f(x) = -2(x^2 - 4x + 4) + 8 - 5$$

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

$$V = (2, 3) \quad y\text{-int: } (0, -5)$$

$$-2(x-2)^2 + 3 = 0$$

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

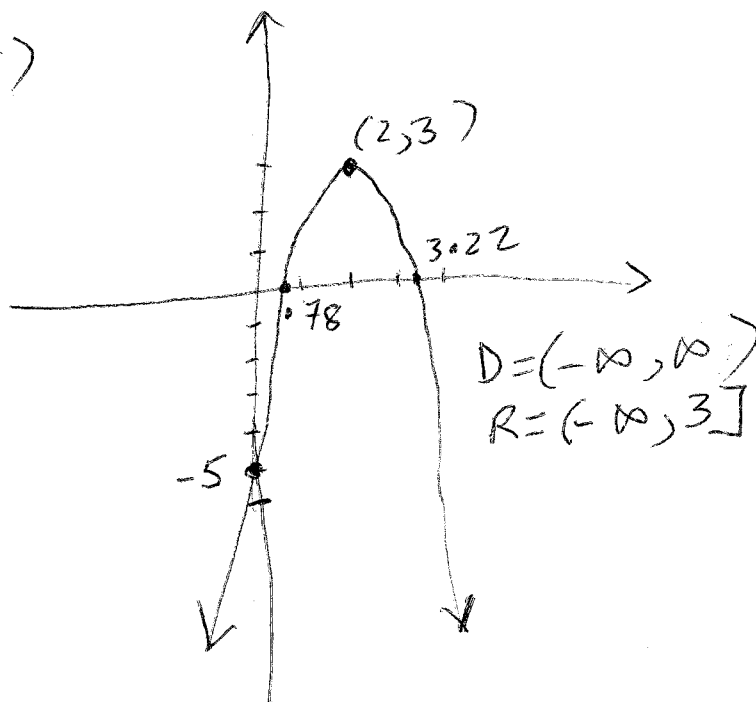
$$x-2 = \pm \sqrt{\frac{3}{2}} = \pm \frac{\sqrt{6}}{2}$$

$$x = 2 \pm \frac{\sqrt{6}}{2}$$

$$x = 3.22$$

$$x = 0.78$$

x-int.



$$(13) \frac{P}{q} = \pm 1, \pm 2, \pm 7, \pm 14$$

$$\begin{array}{r|rrrr} 1 & 1 & 6 & -9 & -14 \\ & & 1 & 7 & -2 \\ \hline & 1 & 7 & -2 & -14 \end{array}$$

$$\begin{array}{r|rrrr} -1 & 1 & 6 & -9 & -14 \\ & & -1 & -5 & 14 \\ \hline \text{zero} & 1 & 5 & -14 & 0 \end{array}$$

$$(x+1)(x^2+5x-14)$$

$$(x+1)(x+7)(x-2)$$

$$x = -1 \quad x = -7 \quad x = 2$$

$$(14) C(x) = 0.70x + b$$

$$7201 = 0.70(100) + b$$

$$= 70 + b$$

$$b = 7201 - 70 = 7131$$

$$C(x) = 0.70x + 7131$$

$$R(x) = 3.70x$$

$$0.70x + 7131 = 3.70x$$

$$7131 = 3x$$

$$x = 2377 \text{ handles}$$