



use vertex form: $y = a(x-h)^2 + k. \Rightarrow \boxed{-\frac{5}{144}(x-12)^2 + 5}$

$$y = a(x-12)^2 + 5$$

Use x-int: (0,0) to find a.

$$0 = a(0-12)^2 + 5$$

$$-5 = a(-12)^2 \Rightarrow \frac{-5}{144} = \frac{144a}{144} \Rightarrow a = \frac{-5}{144}$$

2) $10 = -16t^2 + 46t + 6$

$$0 = -16t^2 + 46t - 4$$

$$0 = -2(8t^2 - 23t + 2)$$

$$0 = 8t^2 - 23t + 2$$

$$t = \frac{23 \pm \sqrt{23^2 - 4(8)(2)}}{2(8)} = \frac{23 \pm \sqrt{465}}{16}$$

Use calc.

$$t \approx 2.8 \text{ sec}, 0.09 \text{ sec.}$$

3) $x^2 - 4x - 12 = 0$

$$(x-6)(x+2) = 0$$

$$x = 6, -2$$

4) $2x^2 - x - 3 = 0$

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

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

5) $\sqrt{(x-4)^2} = \sqrt{-6}$

Cannot square root a negative #.

No solution

6) $D: (-\infty, \infty)$

$$R: (-\infty, 15]$$

7) $V: (4, 6)$

$$8) \frac{3(x-4)^2}{3} = \frac{15}{3}$$

$$\sqrt{(x-4)^2} = \sqrt{5}$$

$$x-4 = \pm\sqrt{5}$$

+4 +4

$$\boxed{x = 4 \pm \sqrt{5}}$$

$$9) (x-4)(3x+1) = 0$$

$$\boxed{x = 4, -\frac{1}{3}}$$

$$10) x^2 + 5x + 6 = 0$$

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

$$\boxed{x = -3, -2}$$

$$\begin{array}{c} 6 \\ 3 \quad \times \quad 2 \\ 5 \end{array}$$