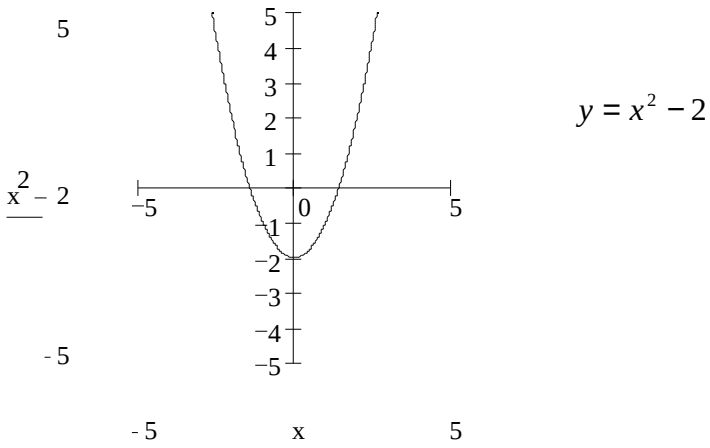
17) $b_1 = \frac{7}{2}\,\text{cm} = 3.5\,\text{cm}$

19) $x = -\frac{33}{5} = -6.6$



$y = x^2 - 2$

b) $y = x^2 + 2$

Quadratic with $a = 1$, $b = 0$, $c = 2$

Discriminant $= (0)^2 - 4(1)(2) = 0 - 8 = -8$

$y = x^2$

Quadratic with $a = 1$, $b = 0$, $c = 0$

Discriminant $= (0)^2 - 4(1)(0) = 0 - 0 = 0$

$y = x^2 - 2$

Quadratic with $a = 1$, $b = 0$, $c = \bar{}2$

Discriminant $= (0)^2 - 4(1)(-2) = 0 - (-8) = 8$

c)

1. Less than zero
2. Equal to zero
3. Greater than zero

5) $x = -3 \pm \sqrt{21}$

These solutions are called the *roots* or *x-intercepts* of the quadratic equation.

7) Vertex = $(-\frac{7}{2}, \frac{85}{4})$

9) Let x be the number(s) of interest. $x = \frac{2}{3}$ or $x = -\frac{5}{3}$

11) No real solutions

13) $r = 3$ or $r = -1$

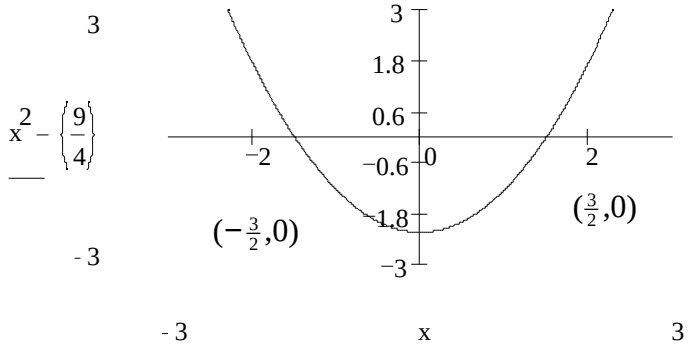
15)

a) $d = \dfrac{-20}{3\pi} + \dfrac{4\sqrt{25 + 375\pi}}{3\pi}$

b) $d \approx 12.6$ in

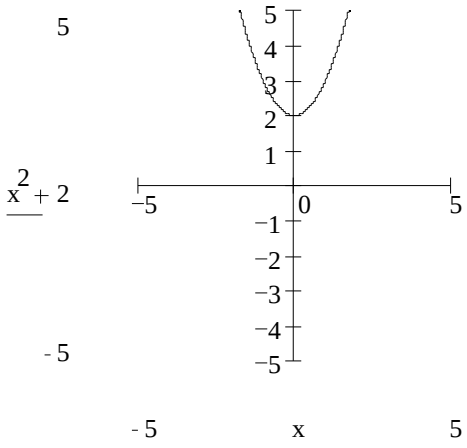
7.3 Algebraic Techniques for Solving Quadratic Equations

1)

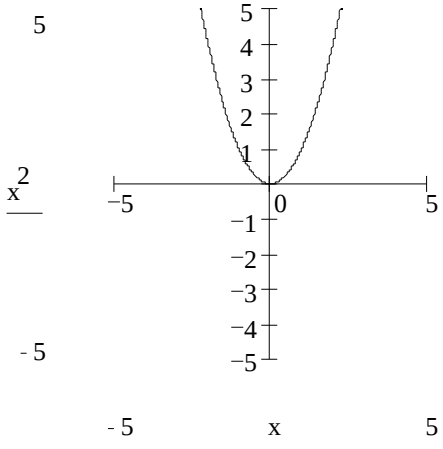


3)

a)



$y = x^2 + 2$



$y = x^2$