$$y = x^2 - 4x + 3$$
two *x*-intercepts

$$y = x^2 - 4x + 4$$
one *x*-intercept

$$y = x^2 - 4x + 6$$
no *x*-intercepts

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(3)}}{2}$$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(4)}}{2}$$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(1)(6)}}{2}$$

$$= \frac{4 \pm \sqrt{4}}{2} \text{ (two solutions)}$$

$$= \frac{4 \pm \sqrt{0}}{2} \text{ (one repeated solution)}$$

$$= \frac{4 \pm \sqrt{-12}}{2} \text{ (no solutions)}$$