Chapter 1

Basic Classes of Functions

Checkpoint Solution

Checkpoint 1.10: Graphing Polynomial Functions

Instruction

Consider the quadratic function $f(x) = 3x^2 - 6x + 2$.

(a) Find the zeroes of f.

(b) Doest the parabola open upward or downward?

(c) Sketch a graph of f.

Solution

(a) We find the zeroes of f using the quadratic function. In this case we have $a = 3$, $b = -6$, $c = 2$. The two zeroes are

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 3 \cdot 2}}{2 \cdot 3} = \frac{6 \pm 2\sqrt{3}}{6} = \frac{3 \pm \sqrt{3}}{3} = 1 \pm \frac{\sqrt{3}}{3}.$$

Using an calculator we can find the alternate form $x_1 \approx 1.58$, $x_2 \approx 0.423$.

(b)

(c)

Answer

(a) The zeroes are $1 \pm \sqrt{3}/3$.

(b)

(c)