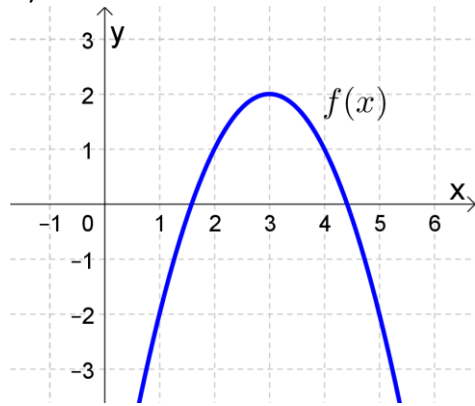


1.

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

b)



c) Maximum value: 2

d) Range: $(-\infty, 2]$

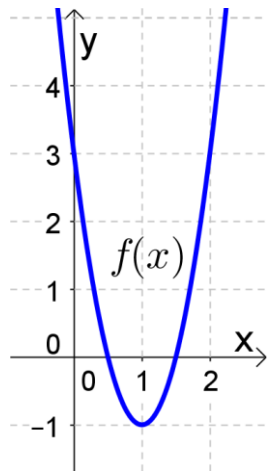
2. 6.25 ft

3.

a) $f(x) = 4(x - 1)^2 - 1$

b) $(1, -1)$

c)

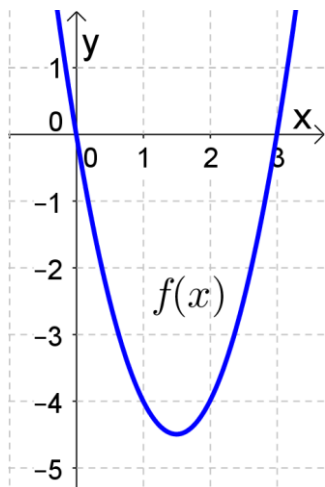
d) Minimum value: -1 e) $[-1, \infty)$

4.

a) $f(x) = 2\left(x - \frac{3}{2}\right)^2 - \frac{9}{2}$

b) $\left(\frac{3}{2}, -\frac{9}{2}\right)$

c)



d) Minimum value: $-\frac{9}{2}$

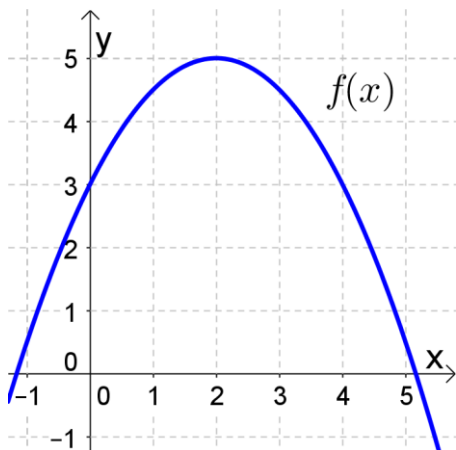
e) $\left[-\frac{9}{2}, \infty\right)$

5.

a) $f(x) = -\frac{1}{2}(x - 2)^2 + 5$

b) (2,5)

c)



d) Maximum value: 5

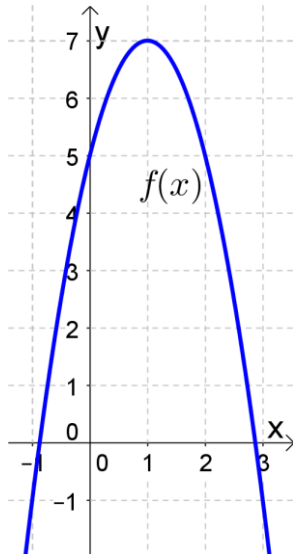
e) $(-\infty, 5]$

6.

a) $f(x) = -2(x - 1)^2 + 7$

b) $(1, 7)$

c)



d) Maximum value: 7

e) $(-\infty, 7]$

7.

a) $(-\frac{3}{2}, -\frac{35}{4})$

b) Minimum value: $-\frac{35}{4}$

c) $[-\frac{35}{4}, \infty)$

8.

a) $(-\frac{1}{7}, \frac{1}{7})$

b) Maximum value: $\frac{1}{7}$

c) $(-\infty, \frac{1}{7}]$

9. Dimensions: 150 ft by 75 ft, Max area: 11250 ft²10. Max area: $1666\frac{2}{3}$ ft²

11. The maximum height attained is 164 ft, which happens 2 seconds after throwing the book.

12. The maximum height attained is 490 m, which happens 10 seconds after the robot jumps up.