

Access to Science, Engineering and Agriculture:
Mathematics 1
MATH00030
Chapter 2 Exercises

1. Find the equations of the following lines.

- (a) Find the equation of the line through the points $(-3, 6)$ and $(0, 0)$.
- (b) Find the equation of the line through the points $(3, 5)$ and $(-1, -1)$.
- (c) Find the equation of the line through the points $(5, 3)$ and $(5, 4)$.
- (d) Find the equation of the line through the points $(-3, 1)$ and $(0, 1)$.
- (e) Find the equation of the line through the points $(3, -2)$ and $(-2, 1)$.

2. Find the equations of the following lines.

- (a) Find the equation of the line through the point $(6, 3)$ parallel to the line $y = -x + 8$.
- (b) Find the equation of the line through the point $(-5, 4)$ parallel to the line $y = 4x + 123456789$.
- (c) Find the equation of the line through the point $(1, 2)$ parallel to the line $y = 5$.

3. Find the equations of the following lines.

- (a) Find the equation of the line through the point $(3, 1)$ parallel to the line through the points $(1, 3)$ and $(3, -5)$.
- (b) Find the equation of the line through the point $(-1, -3)$ parallel to the line through the points $(-2, -3)$ and $(6, 7)$.
- (c) Find the equation of the line through the point $(-1, -3)$ parallel to the line through the points $(4, 5)$ and $(4, 7)$.

4. Sketch the following graphs.

- (a) Sketch the graph of the line with equation $y = -3x - 2$ concentrating on the region between $x = -3$ and $x = 8$.
- (b) Sketch the graph of the line with equation $y = 2x + 3$ concentrating on the region between $x = 0$ and $x = 10$.

5. Solve the following pairs of simultaneous equations.

- (a) Solve the simultaneous equations

$$\begin{aligned} 3x + y &= 4 & (1) \\ -2x + 3y &= 1 & (2) \end{aligned}$$

(b) Solve the simultaneous equations

$$-4x + 3y = 13 \quad (3)$$

$$-2x - 3y = -7 \quad (4)$$

(c) Solve the simultaneous equations

$$2x - 5y = 18 \quad (5)$$

$$-3x - 4y = -4 \quad (6)$$

(d) Solve the simultaneous equations

$$7x - 2y = -19 \quad (7)$$

$$-3x - 5y = 14 \quad (8)$$

(e) Solve the simultaneous equations

$$2x + 3y = 7 \quad (9)$$

$$-6x - 9y = 8 \quad (10)$$

(f) Solve the simultaneous equations

$$2x - y = 4 \quad (11)$$

$$-4x + 2y = -8 \quad (12)$$

6. Find the lengths of the following line segments.

(a) Find the length of the line segment between $(0, 0)$ and $(2, 2)$.

(b) Find the length of the line segment between $(-2, -3)$ and $(-4, 2)$.

(c) Find the length of the line segment between $(2, -2)$ and $(-2, 2)$.

(d) Find the length of the line segment between $(-1, -2)$ and $(1, -2)$.

7. Find the midpoints of the following line segments.

(a) Find the midpoint of the line segment joining $(0, 0)$ and $(-3, 5)$.

(b) Find the midpoint of the line segment joining $(-1, 2)$ and $(2, 3)$.

(c) Find the midpoint of the line segment joining $(2, -4)$ and $(2, 7)$.