2. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

(a) Given

$$y - x = 4$$

and

$$2x^2 - xy = 8$$

show that

$$x^2 - 4x - 8 = 0$$

(2)

(b) Hence solve the simultaneous equations

$$y - x = 4$$

$$2x^2 - xy = 8$$

writing the answers in the form $p + q\sqrt{3}$, where p and q are integers to be found.

(4)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 2 continued

(Total for Question 2 is 6 marks)

3. (i) Find the range of values of z for which

$$\frac{4}{z} < 8$$

giving the answer in simplest form.

(2)

(ii)

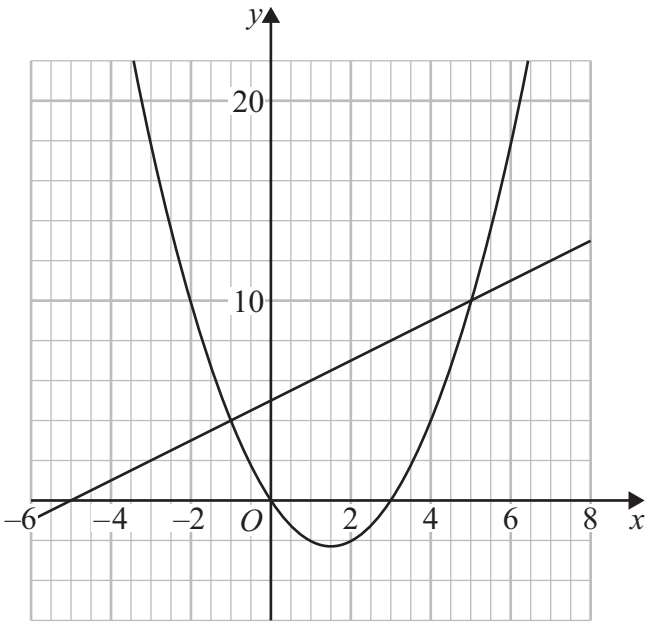


Figure 1

Figure 1 shows a plot of

- the line with equation $y = x + 5$
- the curve with equation $y = x(x - 3)$

On the opposite page there is a copy of Figure 1 labelled Diagram 1.
On Diagram 1 represent the following inequality graphically.

$$x + 5 \leqslant y \leqslant x(x - 3) \quad \text{for} \quad x \geqslant -2$$

(3)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA