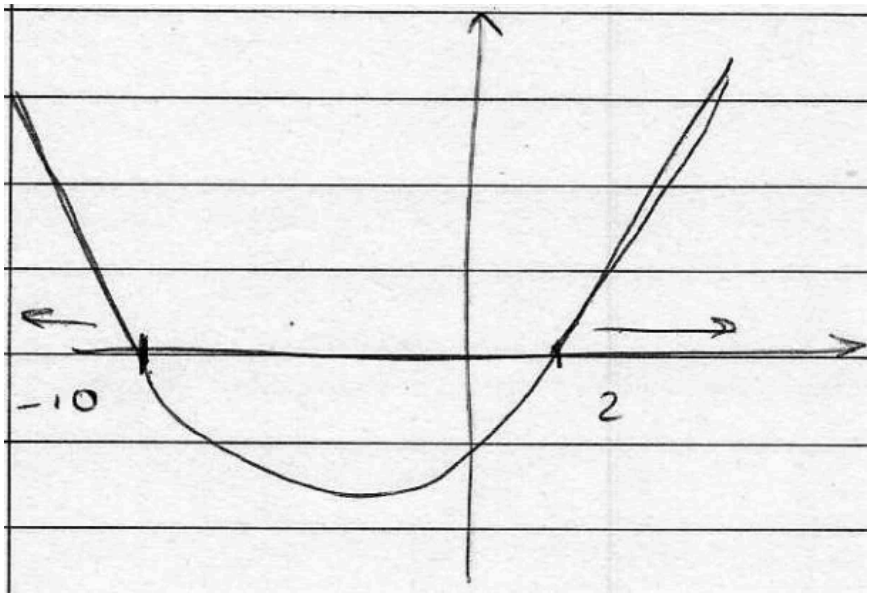
1

(a)

- Rearrange to obtain $x^2 + 8x - 20 > 0$. **M1**
- Factorise as $(x + 10)(x - 2) > 0$, identifying the critical values $x = -10$ and $x = 2$. **M1**
- State $x < -10$ or $x > 2$. **A1**



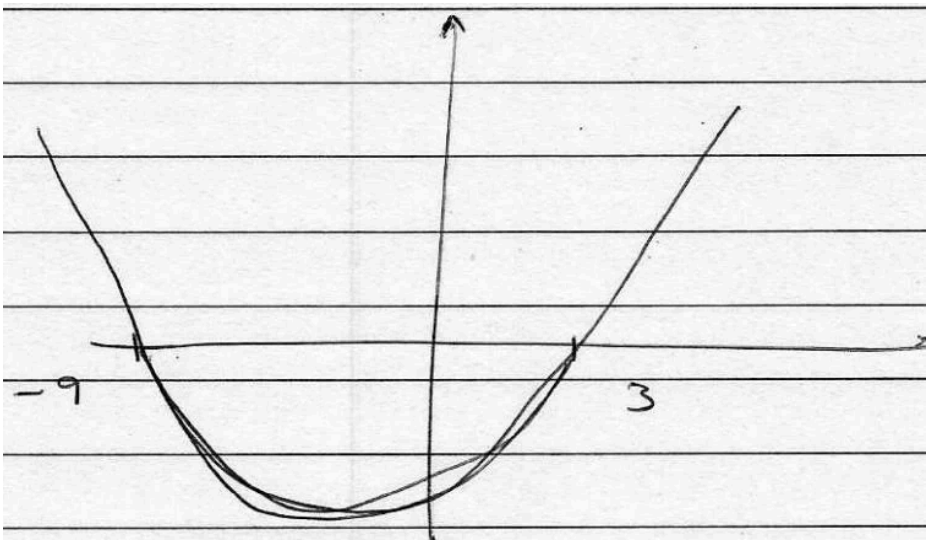
(b)

- Solve the linear inequality to obtain $x < \frac{5}{2}$ and combine it with the result from part (a). **M1**
- Hence the required set is $x < -10$ or $2 < x < \frac{5}{2}$. **A1**

(Total for question 1 is 4 marks)

2

- Expand and rearrange to obtain $x^2 + 6x - 27 < 0$. **M1**
- Factorise as $(x + 9)(x - 3) < 0$. **M1**
- Identify the critical values $x = -9$ and $x = 3$. **A1**
- State $-9 < x < 3$. **A1**



(Total for question 2 is 4 marks)

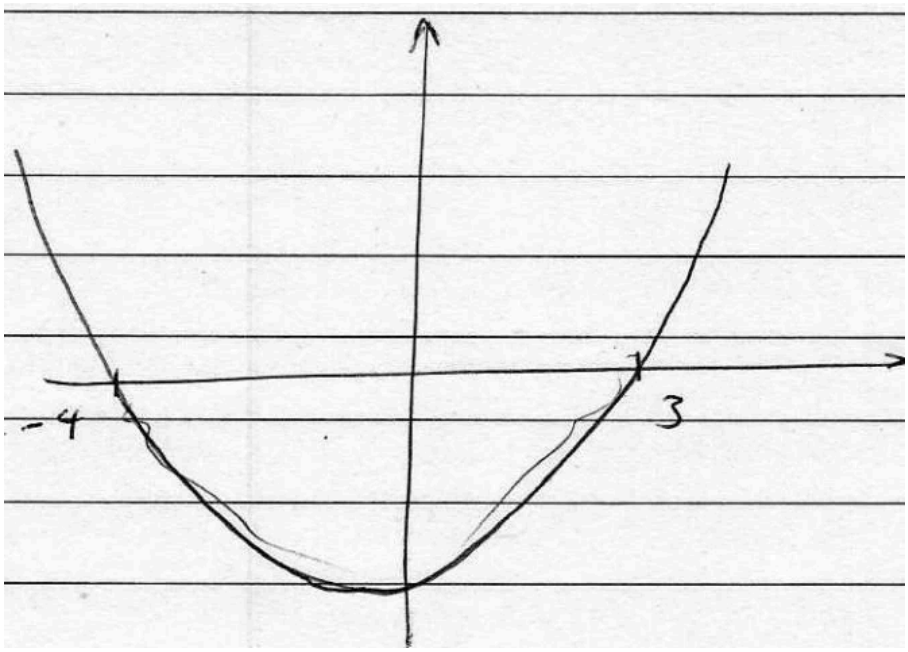
3

- Rearrange the linear equation to $y = 3 - x$ and substitute into the quadratic equation. **M1**
- Simplify to obtain $3x^2 - 20x + 12 = 0$. **A1**
- Factorise and solve to obtain $x = \frac{2}{3}$ or $x = 6$. **M1**
- Find the corresponding values of y, giving $(x, y) = \left(\frac{2}{3}, \frac{7}{3}\right)$ or $(6, -3)$. **A1**

(Total for question 3 is 4 marks)

4

- Expand and rearrange to obtain $x^2 + x - 12 \leq 0$. **M1**
- Factorise as $(x + 4)(x - 3) \leq 0$, identifying the critical values -4 and 3. **M1**
- State $-4 \leq x \leq 3$. **A1**



(Total for question 4 is 3 marks)

5

- Substitute $y = 3x - 1$ into the equation of the circle. **M1**
- Simplify to obtain $5x^2 - 4x - 9 = 0$. **A1**
- Factorise as $(5x - 9)(x + 1) = 0$ to obtain $x = \frac{9}{5}$ or $x = -1$. **M1**
- Find the corresponding y-coordinates and state $\left(\frac{9}{5}, \frac{22}{5}\right)$ and $(-1, -4)$. **A1**

(Total for question 5 is 4 marks)

6

- Rearrange the line equation to $y = 7 - x$ and equate this to the equation of the curve. **M1**
- Simplify to obtain $x^2 - x = 0$. **A1**
- Factorise as $x(x - 1) = 0$ to obtain $x = 0$ or $x = 1$. **M1**
- Find the corresponding coordinates $(0, 7)$ and $(1, 6)$. **A1**

(Total for question 6 is 4 marks)

7

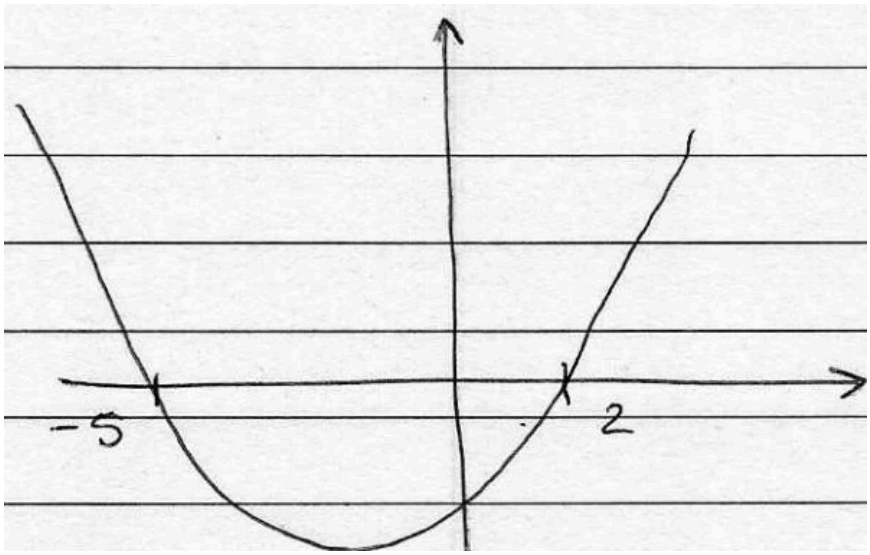
- Rearrange the linear equation to $x = 3 - 2y$ and substitute into the quadratic equation. **M1**
- Expand and simplify to obtain $3y^2 - 6y + 1 = 0$. **A1**
- Apply the quadratic formula correctly. **M1**
- Obtain $y = \frac{3+\sqrt{6}}{3}$ and $y = \frac{3-\sqrt{6}}{3}$. **A1**
- Substitute $y = \frac{3+\sqrt{6}}{3}$ into $x = 3 - 2y$ to obtain $x = \frac{3-2\sqrt{6}}{3}$. **M1**
- Substitute $y = \frac{3-\sqrt{6}}{3}$ into $x = 3 - 2y$ to obtain $x = \frac{3+2\sqrt{6}}{3}$. **A1**
- State the two correctly paired solutions, or their three-significant-figure equivalents. **A1**

(Total for question 7 is 7 marks)

8

(a)

- Factorise as $(x + 5)(x - 2) < 0$. **M1**
- Identify the critical values $x = -5$ and $x = 2$. **M1**
- State $-5 < x < 2$. **A1**



(b)

- Solve the linear inequality to obtain $x \leq \frac{3}{2}$. **M1**
- Combine this with $-5 < x < 2$ to obtain $-5 < x \leq \frac{3}{2}$. **A1**

(Total for question 8 is 5 marks)
