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

A curve has equation

$$y = x(x + 3)(x - 2)$$

(a) Find, in simplest form, $\frac{dy}{dx}$

(3)

(b) Hence find the range of values for x such that

$$\frac{dy}{dx} \geqslant 2$$

(4)

(Total for Question 2 is 7 marks)

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

Solve the equation

$$2y^2 + 1 = \frac{15}{y^2}$$

(5)

(Total for Question 3 is 5 marks)

4.

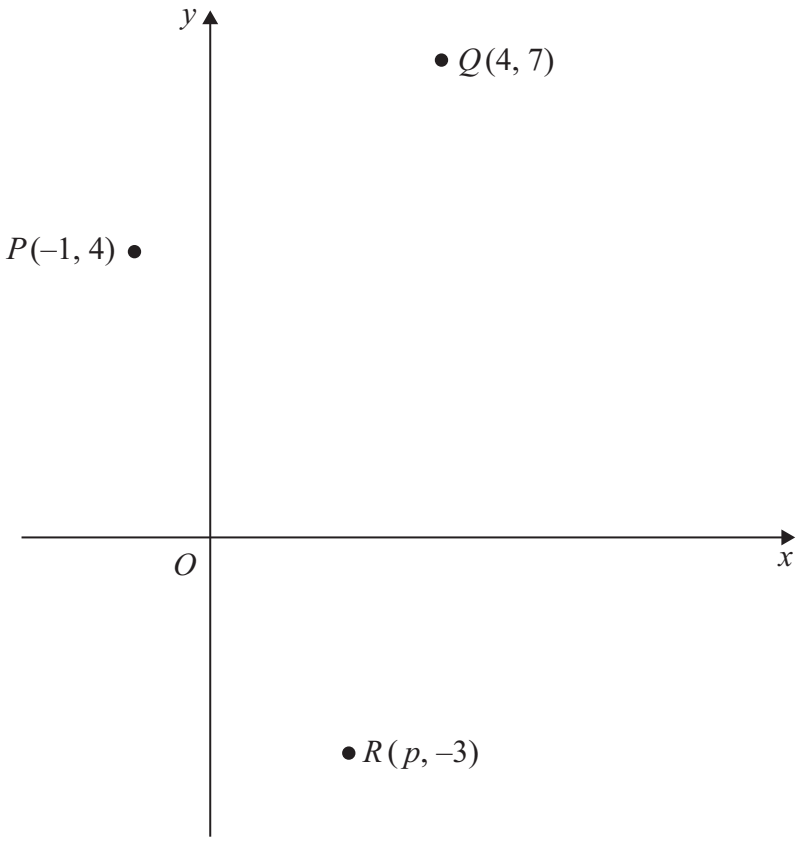


Figure 2

Figure 2 shows the points P, Q and R.

Points P and Q have coordinates $(-1, 4)$ and $(4, 7)$ respectively.

(a) Find an equation for the straight line passing through points P and Q.

Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.

(3)

The point R has coordinates $(p, -3)$, where p is a positive constant.

Given that angle $QPR = 90°$,

(b) find the value of p.

(*Solutions relying on calculator technology are not acceptable.*)

(3)

(Total for Question 4 is 6 marks)