

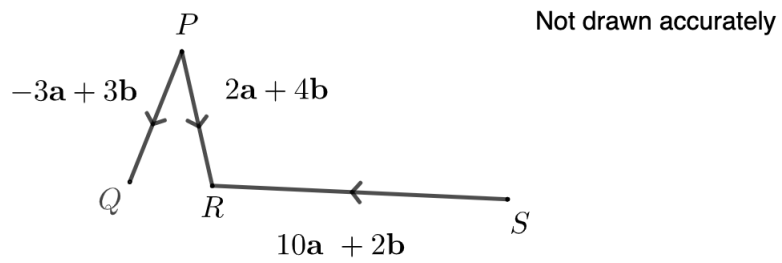
Question 1

Solve:

$$3x^2 + 18x = 7x - 8$$

Question 2

Show that QRS is a straight line.



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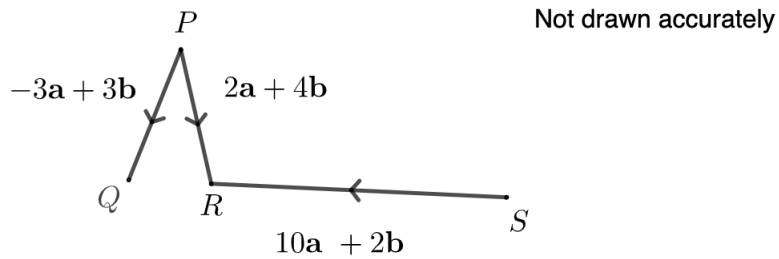
$$3x^2 + 18x = 7x - 8$$

Rearranging, we get: $3x^2 + 11x + 8 = 0$ Factorising, we see $(x + 1)(3x + 8) = 0$

$$\text{So } x = -1, x = -\frac{8}{3}$$

Question 2

Show that QRS is a straight line.



$$\begin{aligned}\overrightarrow{QR} &= \overrightarrow{QP} + \overrightarrow{PR} \\ &= (3\mathbf{a} - 3\mathbf{b}) + (2\mathbf{a} + 4\mathbf{b}) = 5\mathbf{a} + \mathbf{b}\end{aligned}$$

$$\overrightarrow{RS} = 10\mathbf{a} + 2\mathbf{b} = 2\overrightarrow{QR}, \text{ so QRS is a straight line.}$$