

9th January



Corbettmaths

Simplify

$$\frac{18x^{\frac{5}{4}}}{6x} = 3x^{\frac{1}{4}}$$

Find the equation of the straight line passing through B(-2, 8) and C(1, 0).

Give your answer in the form $ax + by + c = 0$

where a, b and c are integers.

gradient = $-\frac{8}{3}$ $y = -\frac{8}{3}x + c$
 $y = -\frac{8}{3}x + \frac{8}{3}$ $0 = -\frac{8}{3} + c$
 $\frac{8}{3}x + y - \frac{8}{3} = 0 \quad \times 3$ $c = \frac{8}{3}$
 $8x + 3y - 8 = 0$

Express $3x^2 + 12x + 13$ in the form $a(x + b)^2 + c$

$$3(x^2 + 4x + \frac{13}{3})$$

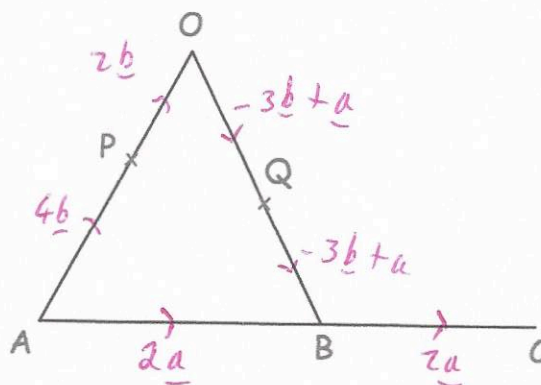
$$3[(x+2)^2 - 4 + \frac{13}{3}]$$

$$3[(x+2)^2 + \frac{1}{3}]$$

$$3(x+2)^2 + 1$$

Find the vector \vec{OB} in terms of \vec{a} and \vec{b}

$$-6\vec{b} + 2\vec{a}$$



Q is the midpoint of OB.
 B is the midpoint of AC.
 Show PQC is a straight line.

$$\vec{PQ} = -\vec{b} + \vec{a}$$

$$\vec{QC} = -3\vec{b} + 3\vec{a} = 3(-\vec{b} + \vec{a})$$

$$\therefore \vec{QC} \text{ and } \vec{PQ} \text{ are parallel.}$$

AOB is a triangle.
 P is a point on AO.

$$\vec{AB} = 2\vec{a} \quad \vec{AO} = 6\vec{b} \quad AP:PO = 2:1$$

As they are parallel and pass through Q, PQC is a straight line.