

18th August

Corbettmaths

Make q the subject of $\frac{p}{qr} = 4 - \frac{1}{r}$

$$p = 4qr - q$$

$$p = q(4r - 1)$$

$$q = \frac{p}{4r - 1}$$

Solve the simultaneous equations

$$x + 8y + z = 33 \quad (1)$$

$$2x - 2y + 3z = 19 \quad (2)$$

$$5x - 4y + 2z = 12 \quad (3)$$

$$(2) - (1) \times 3 \quad -x - 26y = -80$$

$$(3) - (1) \times 2 \quad 3x - 20y = -54$$

$$\quad \quad \quad -3x - 78y = -240$$

$$\quad \quad \quad -98y = -294$$

$$\Rightarrow y = \frac{3}{1}$$

$$\quad \quad \quad x = 2$$

$$2 + 24 + z = 33 \Rightarrow z = 7$$

A curve has a gradient function $\frac{2x^3 - 9}{10}$

The point P is a point on the curve.

The tangent to the curve at the point P is perpendicular to the line

$$2x - 5y + 3 = 0$$

Work out the x -coordinate of P

$$2x - 5y + 3 = 0 \Rightarrow 5y = 2x + 3$$

$$\Rightarrow y = \frac{2}{5}x + \frac{3}{5}$$

$$\downarrow m_{\perp} = -\frac{5}{2}$$

$$\frac{2x^3 - 9}{10} = -\frac{5}{2}$$

$$2x^3 - 9 = -25$$

$$2x^3 = -16$$

$$x^3 = -8$$

$$x = -2$$