

$$S_n = n(a + l)$$

$$S_{60} = 60(-1 + l)$$

$$= -60 + 60l$$

$$60l = 60$$

$$(5 \times n) - 1 = \text{term}$$

$$60\text{th term} = 294$$

$$5 \times 59 - 1 = 294$$

$$S_{60} = 60(-1 + 294)$$

$$= -60 + 17640$$

$$\therefore \text{Sum of 60 terms} = 17580$$

$$c) i) y = x^3 + x^2 - 2x + 2$$

$$y' = 3x^2 + 2x - 1$$

$$y' = 0 \quad \text{stab. pts}$$

$$3x^2 + 2x - 1 = 0 \quad \begin{matrix} p = -3 \\ q = 2 \\ r = -1 \end{matrix}$$

$$\frac{(3x+3)(3x-1)}{3}$$

$$(x+1)(3x-1)$$

$$x = -1 \quad x = -\frac{1}{3}$$

sub into eqn for values \uparrow

$$-1 \quad y = -1^3 + 1^2 - (-1) + 2$$

$$y = -1 + 1 + 1 + 2$$

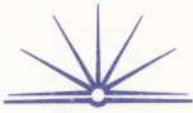
$$y = 3$$

$$A = (-1, 3)$$

$$-\frac{1}{3} \quad y = \left(-\frac{1}{3}\right)^3 + \left(-\frac{1}{3}\right)^2 - \left(-\frac{1}{3}\right) + 2$$

$$y = 2.407407$$

$$B \left(-\frac{1}{3}, 2.4\right)$$



$$y' = 3x^2 + 2x - 1$$

$$3x^2 + 2x - 1 > 0$$

$$3x^2 + 2x > 1$$

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

$$3x+2 > 1$$

$$3x > -1$$

$$x > -\frac{1}{3}$$

when $x > -\frac{1}{3}$ curve concaves up.

~~when $x < -\frac{1}{3}$ curve concaves down.~~

$$\text{(ii)} \quad x^3 + x^2 - x + 2 = k$$

$$+ \sqrt{(\quad)^2 + \quad}$$

$$y' = 3x^2 + 2x - 1$$

$$\Delta = b^2 - 4ac$$

$$= (2)^2 - 4 \times 3 \times -1$$

$$= 4 + 12$$

$$\Delta = 16$$

$$k = 16$$