

✓

$$x(x-b) + x(x-a) \equiv x(2x-a-b)$$

$$\underline{x=a}$$

$$\begin{aligned} \text{LHS} &= a(a-b) + a(a-a) \\ &= a^2 - ab \end{aligned}$$

$$\begin{aligned} \text{RHS} &= a(2a-a-b) \\ &= a^2 - ab \end{aligned}$$

$$\therefore \text{LHS} = \text{RHS}$$

$$\underline{x=b}$$

$$\begin{aligned} \text{LHS} &= b(b-b) + b(b-a) \\ &= b^2 - ab \end{aligned}$$

$$\begin{aligned} \text{RHS} &= b(2b-a-b) \\ &= b^2 - ab \end{aligned}$$

$$\therefore \text{LHS} = \text{RHS}$$

$$\underline{x=0}$$

$$\begin{aligned} \text{LHS} &= 0(0-b) + 0(0-a) \\ &= 0 \end{aligned}$$

$$\text{RHS} = 0(0-a-b)$$

$$= 0$$

$$\therefore \text{LHS} = \text{RHS}$$

\therefore as it is true for more than 2 values of x
then it must be true for all values of x .

8b)

$$m^2 \equiv a(m-1)^2 + b(m-2)^2 + c(m-3)^2$$

m=1

$$b + 4c = 1$$

m=2

$$a + c = 4$$

m=3

$$4a + b = 9$$

$$b + 16 - 4a = 1$$

$$c = 4 - a$$

$$b - 4a = -15$$

$$b + 4a = 9$$

$$2b = -6$$

$$b = -3, c = 1, a = 3$$

$$\therefore m^2 \equiv \underline{3(m-1)^2 + (m-2)^2 - 3(m-3)^2}$$