

### 3<sup>rd</sup> exercise.

1)  $-2$  is a root of  $E(x)$  (Given)

Then,  $E(-2) = 0$

$$\text{SO, } (2m-3)(-2)^2 + (m-1)(-2) - 5m + 4 = 0$$

$$8m - 12 - 2m + 2 - 5m + 4 = 0$$

$$\boxed{m = 6}$$

$$\begin{aligned} 2) \quad G(x) &= a(2x-1)^2 - cx^2 + (3a-b)x - 4a - 3 \\ &= a[4x^2 - 4x + 1] - cx^2 + 3ax - bx - 4a - 3 \\ &= \underline{4a}x^2 - \underline{4a}x + \underline{a} - \underline{c}x^2 + \underline{3a}x - \underline{b}x - \underline{4a} - \underline{3} \end{aligned}$$

$$\text{Thus, } G(x) = (4a-c)x^2 + (-a-b)x - 3a - 3.$$

b) For  $m=2$ ,  $E(x) = x^2 + x - 6$

Since  $E(x)$  is identical to  $G(x)$  then comparing:

$$\text{Coefficients of } x^2: 4a - c = 1 \quad \dots \text{ (i)}$$

$$\text{Coefficients of } x: -a - b = 1 \quad \dots \text{ (ii)}$$

$$\text{Constants: } -3a - 3 = -6$$

$$\boxed{a = 1}$$

sub value of  $a$  in eqn (i) & (ii) to get

$$\boxed{c = 3} \quad \& \quad \boxed{b = -2}$$

$$\begin{aligned} 3) \quad F(x) &= (x+3)(x-2) + (2x-1)(2-x) + 2x^2 - 8 \\ &= (x+3)(x-2) - (2x-1)(x-2) + 2(x-2)(x+2) \\ &= (x-2) [ (x+3) - (2x-1) + 2(x+2) ] \end{aligned}$$

$$\text{Thus, } F(x) = (x-2)(x+8).$$