

~~11/12~~

Ex → 2.5

Clam X

1(iii)

Q

$$x^2 + x - 3$$

$$x^2 - x + 1$$

$$x^4 - 3x^2 + 4x + 5$$

$$x^4 + x^2$$

$$-x^3$$

$$x^3 - 4x^2 + 4x$$

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

$$-3x^2 + 3x + 5$$

$$+3x^2 + 3x + 3$$

$$R = 8$$

$$4 \overline{) 9}$$

$$8$$

$$1$$

Quotient

Dividend

Remainder

Dividend

$$= \text{Divisor} \times \text{Quotient} + \text{Remainder}$$

2(ii)

$$\begin{array}{r} \cancel{3x^2} - 4x + 2 \\ x^2 + 3x + 1 \overline{) 3x^4 + 5x^3 - 7x^2 + 2x + 2} \\ \underline{\cancel{3x^4} + 9x^3 + 3x^2} \\ -4x^3 - 10x^2 + 2x \\ \underline{+ 4x^3 - 12x^2 - 4x} \\ -2x^2 + 6x + 2 \end{array}$$

Yes it
is factor

$$\begin{array}{r} 2x^2 + 6x + 2 \\ \underline{2x^2 + 6x + 2} \\ R = 0 \end{array}$$

$$x^2 + 2x + 1$$

$$3x^2 - 5 \overline{) 3x^4 + 6x^3 - 2x^2 - 10x - 5}$$

$$\underline{3x^4} \qquad \qquad \qquad -5x^2 \downarrow \qquad \downarrow$$

$$x^2 + 2x + 1$$

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

$$= x^2 + x + x + 1$$

$$= x(x+1) + 1(x+1)$$

$$= (x+1)(x+1)$$

$$x+1=0 \quad | \quad x+1=0$$

$$(x=-1) \quad | \quad (x=-1)$$

$$\underline{6x^3 + 3x^2 - 10x} \qquad \underline{-10x}$$

$$\underline{3x^2 - 5} \qquad \underline{3x^2 - 5}$$

$$\underline{0}$$

$$-1, -1, \sqrt{\frac{5}{3}}, -\sqrt{\frac{5}{3}}$$

$$x^2 - (\alpha + \beta)x + \alpha\beta$$

$$\sqrt{\frac{5}{3}}, -\sqrt{\frac{5}{3}}$$

$$(x - \alpha)(x - \beta)$$

$$= (x - \sqrt{\frac{5}{3}})(x + \sqrt{\frac{5}{3}})$$

$$= x^2 - \left(\sqrt{\frac{5}{3}}\right)^2$$

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