Theory Of Equations

Polynomials

Horner's Method Of Synthetic Division

Use horner's method to find quotient and Remainder when $x^5 - 4x^4 - 7x^3 + 11x - 13$ is divide by $x-5$.

Sol.

$x - 5 = 0$

$x = 5$.

5	1	−4	−7	0	11	−13
		5	5	−10	−50	−195
	1	1	−2	−10	−39	−208

Remainder $= -208$

Quotient :-

$$x^4 + x^3 - 2x^2 - 10x - 39.$$

(2) Use Horner's method to find the Quotient and Remainder when $6x^4 + 11x^3 + 13x^2 - 3x + 27$ is divided by $3x + 4$.

Sol:

$3x + 4 = 0$

$x = -4/3.$

$-4/3$	6	11	13	-3	27
		-8	-4	-12	20
	6	3	9	-15	47

Remainder $= 0$.

Quotient $= \dfrac{6x^3 + 3x^2 + 9x - 15}{3}$.

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