

January 4

Unit 2 Bare Necessities - Polynomials



Operations with Polynomials

EX1. $(7x^4 - 7x^2 - 8) + (7x - 8 - 8x^4)$

$$7x^4 - 7x^2 - 8 + 7x - 8 - 8x^4$$

$$\boxed{-1x^4 - 7x^2 + 7x - 16}$$

EX2. $(p^4 - 4p^3 - 8p) - (-7p^4 - 5p^3 + 7p)$

$$p^4 - 4p^3 - 8p + 7p^4 + 5p^3 - 7p$$

$$\boxed{8p^4 + 1p^3 - 15p}$$

EX3. $(6x - 3)(2x + 5)$

	$6x^1$	-3
$2x^1$	$12x^2$	$-6x$
$+5$	$30x$	-15

$$12x^2 - 6x + 30x - 15$$

$$\boxed{12x^2 + 24x - 15}$$

$$(6x - 3)(2x + 5)$$

$$12x^2 + 30x - 6x - 15$$

$$\boxed{12x^2 + 24x - 15}$$

Synthetic Division

EX5. $(3x^2 + 4x - 12) \div (x + 5)$

$$\begin{array}{r|l} x+5 & 0 \\ -5 & -5 \\ \hline & x = -5 \end{array}$$

$$\begin{array}{r|rrrr} -5 & 3 & 4 & -12 & \\ & 0 & -15 & 55 & \\ \hline & 3 & -11 & 43 & \\ \hline & \boxed{3x - 11 + \frac{43}{x+5}} & & & \end{array}$$

EX6. $(x^4 - 3x^2 + 2x + 12) \div (x + 1)$

$$(x^4 + 0x^3 - 3x^2 + 2x + 12) \div (x + 1)$$

$$\begin{array}{r|l} x+1 & 0 \\ -1 & -1 \\ \hline & x = -1 \end{array}$$

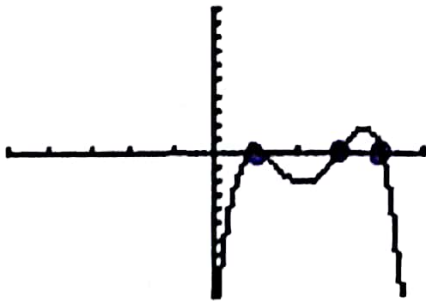
$$\begin{array}{r|rrrrrr} -1 & 1 & 0 & -3 & 2 & 12 & \\ & 0 & -1 & 1 & 2 & -4 & \\ \hline & 1 & -1 & -2 & 4 & 8 & \\ \hline & \boxed{1x^3 - 1x^2 - 2x + 4 + \frac{8}{x+1}} & & & & & \end{array}$$

Zeroes, Multiplicity, and End Behavior

End Behavior:		even exponent	odd exponent
positive coefficient			

Zeroes and Multiplicity:	

EX4

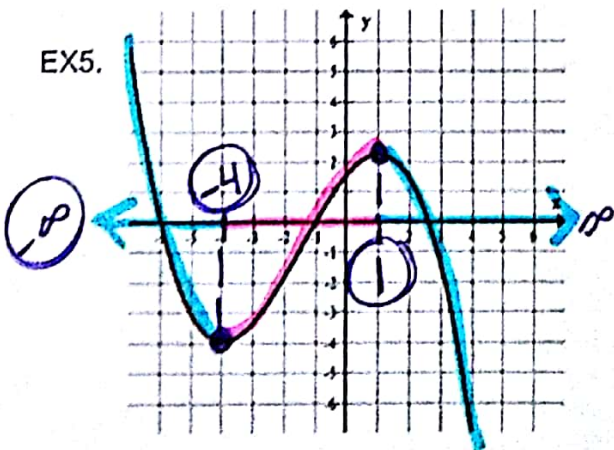


$x = 1$ mult 2
 $x = 3$ mult 1
 $x = 4$ mult 1

negative coefficient
 even exponent

Extrema, Intervals for Increasing and Decreasing

EX5.



$(-4, -4)$ relative minimum

$(1, 2)$ relative maximum

inc: $(-4, 1)$

dec: $(-\infty, -4)$ $(1, \infty)$