

Unit 2 Bare Necessities - Polynomials



Operations with Polynomials

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

* Combine like terms

$$-x^4 - 7x^2 + 7x - 16$$

EX2. $(p^4 - 4p^3 - 8p) + (47p^4 + 5p^3 - 7p)$

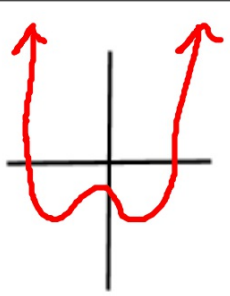
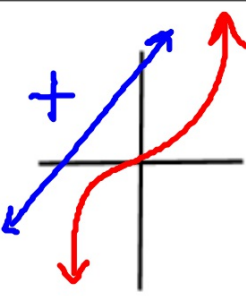
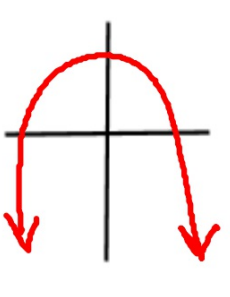
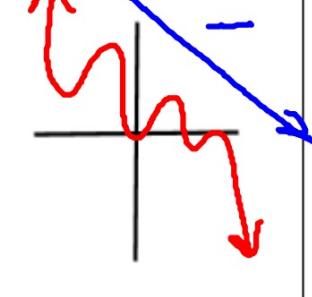
① Change all signs after -

② Combine like terms

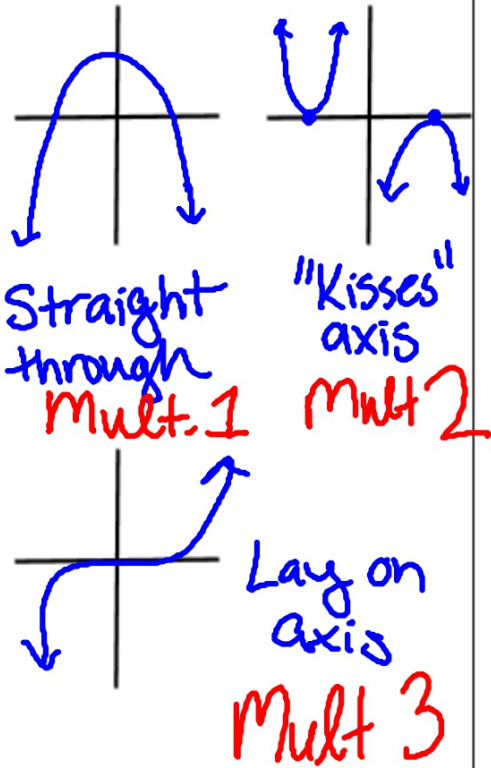
$$8p^4 + p^3 - 15p$$

Zeroes, Multiplicity, and End Behavior

End Behavior:

	even exponent	odd exponent
positive coefficient		
negative coefficient		

Zeroes and Multiplicity:

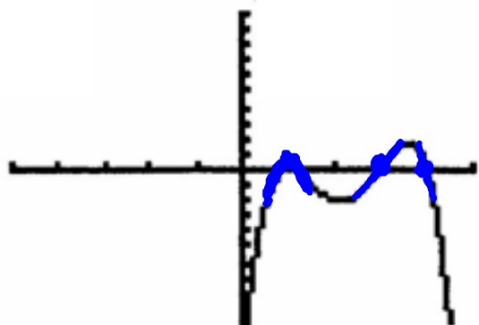


Straight through
Mult. 1

"Kisses" axis
Mult 2

Lay on axis
Mult 3

EX4



$$x=1 \quad \text{Mult } 2$$

$$x=3 \quad \text{Mult } 1$$

$$x=4 \quad \text{Mult } 1$$

Synthetic Division

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

$$\begin{array}{r|rrr} -5 & 3 & 4 & -12 \\ & \downarrow & -15 & 55 \\ \hline & 3 & -11 & 43 \end{array}$$

↑
Remainder

$$3x - 11 + \frac{43}{x+5}$$

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

$$x^4 + 0x^3 - 3x^2 + 2x + 12$$

$$\begin{array}{r|rrrrrr} -1 & 1 & 0 & -3 & 2 & 12 \\ & \downarrow & -1 & 1 & 2 & -4 \\ \hline & 1 & -1 & -2 & 4 & 8 \end{array}$$

$$x^3 - x^2 - 2x + 4 + \frac{8}{x+1}$$

Unit 3 Bare Necessities - Stats and Factoring



Factor Using GCF

EX1. $\underline{45x^2} - \underline{25x}$

$$\begin{aligned} & \textcircled{5}(9x^2 - 5x) \\ & x(9x - 5) \end{aligned}$$

$$\boxed{5x(9x-5)}$$

EX2. $-\underline{18a^3b^4c} + \underline{12a^4b^2c^2} - \underline{30a^3b^2}$

$$\begin{aligned} & -6(3a^{\textcircled{5}}b^{\textcircled{4}}c - 2a^{\textcircled{4}}b^{\textcircled{2}}c^2 + 5a^{\textcircled{3}}b^{\textcircled{2}}) \\ & a^{\textcircled{3}}(3a^{\textcircled{2}}b^{\textcircled{4}}c - 2a^{\textcircled{1}}b^{\textcircled{2}}c^2 + 5b^{\textcircled{2}}) \\ & b^{\textcircled{2}}(3a^{\textcircled{2}}b^{\textcircled{2}}c^{\textcircled{1}} - 2ac^{\textcircled{2}} + 5) \end{aligned}$$

$$\boxed{-6a^3b^2(3a^2b^2c - 2ac^2 + 5)}$$

Factor Using GCF

Factor Difference of Squares

EX1. $45x^2 - 25x$
EX3. $h^2 - 100$

$$\sqrt{h^2} = h$$

$$\sqrt{100} = 10$$

$$(h+10)(h-10)$$

Factor Trinomials

EX 3. $g^2 + 5g - 24$

$$\begin{array}{c} -24 \\ / \quad \backslash \end{array}$$

$$\underline{-3g} + \underline{8g} = 5g$$

	g	8
g	g^2	$8g$
-3	$-3g$	-24

$$(g+8)(g-3)$$

EX 4. $6x^2 - 19x + 10$

$$\begin{array}{c} 60 \\ / \quad \backslash \end{array}$$

$$\underline{-15x} + \underline{-4x} = -19x$$

	$2x$	-5
$3x$	$6x^2$	$-15x$
-2	$-4x$	10

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

Methods for Collecting Data

survey - gathering data through asking a sample of a population

observational study - observing a sample and not doing anything to affect the outcome

experiment - changing something in the sample that will affect the outcome

Sampling Techniques

simple random: all individuals have the same chance of being selected

stratified: divide population into groups and select from each group

systematic: selects a number, n , at random and then selects every n^{th} individual (pattern)

convenience: researcher selects subjects that are conveniently accessible

cluster: divide population into groups and select entire group

voluntary response: individuals are self-selected volunteers (call-in/mail-in surveys)