

Advanced Algebra

Unit 5 Polynomials Assignment #6

I can multiply out to general form

Multiply the following problems out into general form.

Notes Example: $y = (x-2)(x+4)(x-6)$

We should be able to foil the product of two binomials in our head at this point in the year.

So $(x-2)(x+4) = x^2 + 2x - 8$

Now I will take $(x-6)$ and multiply it by $(x^2 + 2x - 8)$ I will set up a 3 by 2 box to help with this.

	x^2	$2x$	-8
x	x^3	$2x^2$	$-8x$
-6	$-6x^2$	$-12x$	48

Now combine like terms and you have $y = x^3 - 4x^2 - 20x + 48$. The reason that being able to put something into general form is so important is that you can use the power rule to find the derivative. The power rule is the easiest calculus rule and it is only for a polynomial in general form.

For the following problems, put them into general form and then find the derivative function. Locate the Local max and local min.

1) $y = (x-3)(x+4)(x+6)$

	x^2	$1x$	-12
x	x^3	x^2	$-12x$
6	$6x^2$	$6x$	-72

2) $y = (x+8)(x-2)(x+3)$

	x^2	$+6x$	-16
x	x^3	$6x^2$	$-16x$
3	$3x^2$	$18x$	-48

#2 General form
 $x^3 + 9x^2 + 2x - 48$

#1 General form
 $x^3 + 7x^2 - 6x - 72$

#1 Derivate
 $3x^2 + 14x - 6$

#2 Derivative
 $3x^2 + 18x + 2$

Coordinates of local Max $(-5.06, 8.03)$
 Coordinates of the local min $(-3.9, -73.2)$

Coordinates of the Local Max
 Coordinates of the local min

3) $y = (x+4)(x-6)(x+6)$

	x^2	$-2x$	-24
x	x^3	$-2x^2$	$-24x$
6	$6x^2$	$-12x$	-144

4) $y = (2x-3)(x+4)(x+2)$

#2 General form
 $x^3 + 4x^2 - 36x - 144$

#4 General Form
 $2x^3 + 9x^2 - 2x - 24$

#2 Derivate
 $3x^2 + 8x - 36$

	x^2	$+6x$	$+8$
$2x$	$2x^3$	$12x^2$	$16x$
-3	$-3x^2$	$-18x$	-24

#4 Derivative
 $6x^2 + 18x - 2$

Assignment #6

5) $y = (x+4)(x-8)(x+12)$

	x^2	$-4x$	-32
x	$3x$	$-12x^2$	$-32x$
12	$12x^2$	$-48x$	-384

General Form Equation

$$x^3 + 8x^2 - 80x - 384$$

Derivative function

$$3x^2 + 16x - 80$$

Coordinates of the local max and min

$$(3.15, -525)$$

$$(-8.48, 260)$$

7) $y = (4x-2)(x+2)(x-5)$

	x^2	$-3x$	-10
$4x$	$4x^3$	$-12x^2$	$-40x$
-2	$-2x^2$	$6x$	20

General form Equation

$$4x^3 - 14x^2 - 34x + 20$$

Derivative Function

$$12x^2 - 28x - 34$$

Coordinates of the local max and min

$$(3.21, -101)$$

$$(0.88, 36.4)$$

6) $y = (3x-2)(x+4)(x-6)$

	x^2	$-2x$	-24
$3x$	$3x^3$	$-6x^2$	$-72x$
-2	$-2x^2$	$4x$	18

General Form equation

$$3x^3 - 8x^2 - 68x + 18$$

Derivative Function

$$9x^2 - 16x - 68$$

Coordinates of the local max and min

$$(3.78, -161)$$

$$(-2, 128)$$

8) $y = (x-5)(x+8)(2x-2)$

	x^2	$+3x$	-40
$2x$	$2x^3$	$6x^2$	$-80x$
-2	$-2x^2$	$-6x$	80

General form equation

$$2x^3 + 4x^2 - 86x + 80$$

Derivative function

$$6x^2 + 8x - 86$$

Coordinates of the local max and min

$$(3.17, -88)$$

$$(-4.51, 365)$$