Advanced Algebra

Unit 5: Polynomials

Assignment #7 Find the Max and the Min with the Power rule

For the following problems, find the Local Max and the local min. You should be making sure the polynomial is in general form and then find the derivative with the power rule, then use your calculator.

(Quadratic formula should be programed by now...makes things a lot quicker)

1) $y= x^3+7x^2-6x-72$

Derivative $3x^2+14x-6$

Local Max and Local min (.395, -73) Min

(-5.06, 8.03) MAX

2) $y= (2x-2)(x+4)(x-8)$

	x^2	$-4x$	-32
$2x$	$2x^3$	$-8x^2$	$-64x$
-2	$-2x^2$	$8x$	64

General Form $y= 2x^3-10x^2-56x+64$

Derivative $6x^2-20x-56$

Local max and Local min (5.14, -216) (-1.81, 120.7) Local MAX

3) $y=x^3+4x^2-36x-144$

Derivative Function $3x^2+8x-36$

Local Max and Local Min (2.38, -194) Local Min

(-5.05, 11.02) local MAX

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

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

General form $y=3x^3+15x^2+6x-24$

Derivative $9x^2+30x+6$

Local max and Local Min (-.21,) (-3.11, ——)

Assignment #7

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

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

General Form

$y = x^3 + 9x^2 + 2x - 48$

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

Local max and Min $(-.11, \_\_\_)$ $(-5.89, \_\_\_)$

6) y=3x³-8x²-68x+48

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

Local max and Local min

$(3.8, -161.3)$ Local Min $(-2, 128)$ Local MAX

7) y=x³+8x²-80x-384 A given Root is -12. Use division to factor the problem and power rule to find the local max and min. Then back a graph clearly showing all of the critical information. Graph should use this whole space

$$\begin{array}{r} x^2 - 4x - 32 \\ x+12 \overline{) x^3 + 8x^2 - 80x - 384} \\ -x^3 + 12x^2 \\ \hline -4x^2 - 80x \\ +4x^2 + 48x \\ \hline -32x - 384 \\ +32x + 384 \\ \hline \emptyset \end{array}$$

$(x+12)(x-8)(x+4)$

Derivative

$3x^2 + 16x - 80$

$(3.15, -525)$ Local Min

$(-8.48, 260)$ Local Max