Algebra 2 Name_____

Chapter 4 Review (4.1-4.4)

Date_____ Period____

All work must be completed on a seperate sheet of paper. All Final answers must be written on this WS.

4.1 - Example 1

Describe the end behavior of each function. State the degree and leading coefficient. State the domain and range of the function.

1) $f(x) = -x^5 + 3x^3 - 2x - 3$

$f(x) \to +\infty$ as $x \to -\infty$

$f(x) \to -\infty$ as $x \to +\infty$

2) $f(x) = -x^4 + x^2 + 3$

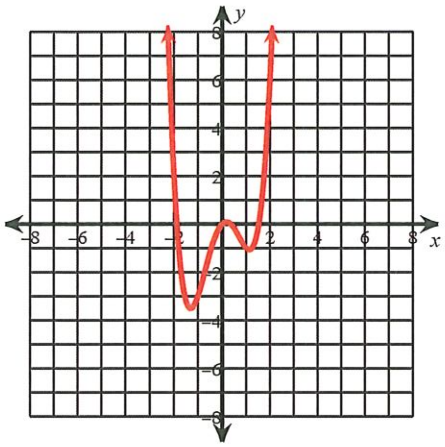
$f(x) \to -\infty$ as $x \to -\infty$

$f(x) \to -\infty$ as $x \to +\infty$

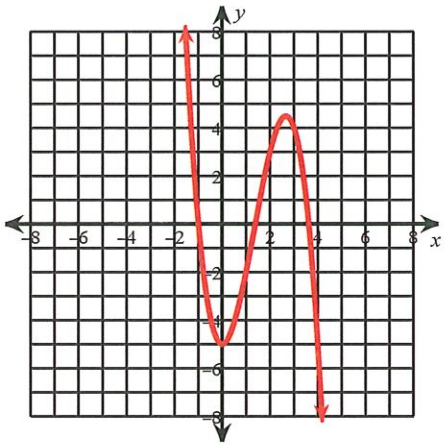
Example 2

Sketch the graph of each function. Include a table of values.

3) $f(x) = x^4 - 3x^2 + x$



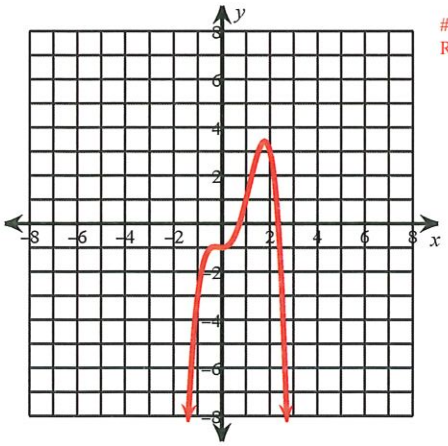
4) $f(x) = -x^3 + 4x^2 - 5$



4.1 - Example 5 and 4.2 - Example 1

Sketch the graph of each function. State the number of real zeros. Approximate each zero to the nearest tenth. Include a table of values.

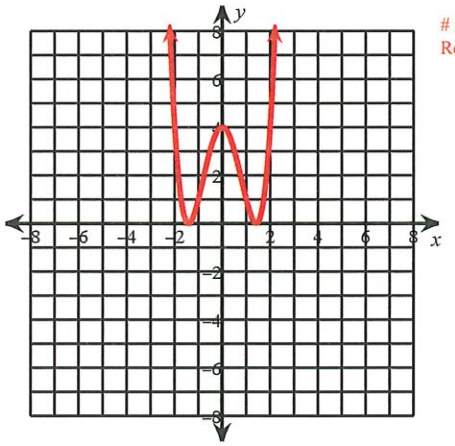
5) $f(x) = -x^4 + 2x^3 + x^2 - 1$



Real Zeros: 2

Real Zeros: 2.3, 0.7

6) $f(x) = x^4 - 4x^2 + 4$

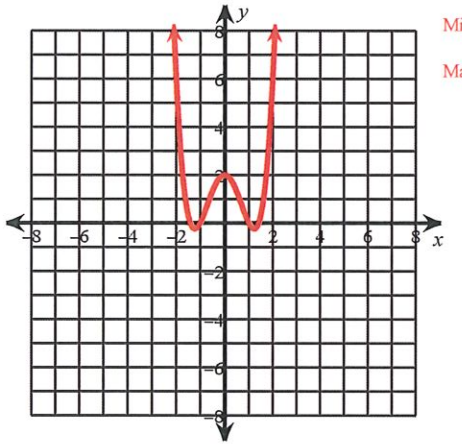


Real Zeros: 2

Real Zeros: −1.4, 1.4

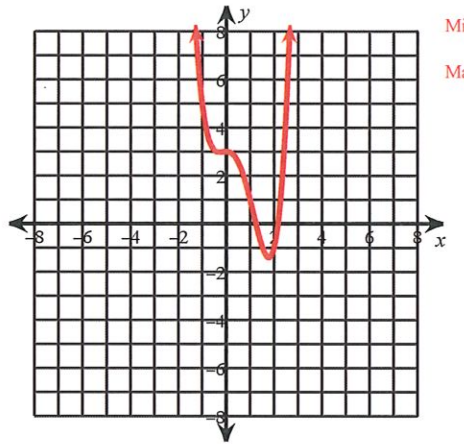
Example 2
Sketch the graph of each function. Approximate the relative minima and relative maxima to the nearest tenth. Include a table of values.

7) $f(x) = x^4 - 3x^2 + 2$



Minima: $(-1.2, -0.3)$
$(1.2, -0.3)$
Maxima: $(0, 2)$

8) $f(x) = x^4 - 2x^3 - x^2 + 3$



Minima: $(-0.3, 3)$
$(1.8, -1.4)$
Maxima: $(0, 3)$

4.3 - Example 2 and 3
Simplify each expression.

9) $(3x^4 - 8x^2) - (x^4 - x^2)$ $2x^4 - 7x^2$

10) $(3n^4 + 6 + n^3) + (7n^2 - 6n^3 + 7n^4)$ $10n^4 - 5n^3 + 7n^2 +$

11) $(7n + 4 + 7n^4 + 7n^3) + (4n^2 - 7n + 8n^4 + 2n^3)$ $15n^4 + 9n^3 + 4n^2 + 4$

Example 4 and 5
Find each product.

12) $5p^4(6p - 7)$ $30p^5 - 35p^4$

13) $4(3a^2 - 8a - 7)$ $12a^2 - 32a - 28$

14) $(4n - 5)(6n - 8)$ $24n^2 - 62n + 40$

15) $(8r + 4)(r^2 - 8r - 2)$ $8r^3 - 60r^2 - 48r - 8$

16) $(5v^2 - 8v + 6)(7v^2 - v - 7)$ $35v^4 - 61v^3 + 15v^2 + 50v - 42$

4.4 - Example 1
Divide.

17) $(2r^3 + 40r^2 + 4r) \div 8r^2$ $\frac{r}{4} + 5 + \frac{1}{2r}$

18) $(r^3 + 40r^2 + 8r) \div 8r^3$ $\frac{1}{8} + \frac{5}{r} + \frac{1}{r^2}$

Example 2, 3, and 4
Divide.

19) $(v^5 + 8v^4 - 5v^3 - 10v^2 - v + 1) \div (v - 1)$ $v^4 + 9v^3 + 4v^2 - 6v - 7 - \frac{6}{v - 1}$

20) $(x^3 + 4x^2 - 57x + 38) \div (x + 10)$ $x^2 - 6x + 3 + \frac{8}{x + 10}$

21) $(-7v^3 + 55v^2 + 13v - 39) \div (v - 8)$ $-7v^2 - v + 5 + \frac{1}{v - 8}$

Example 5
Divide.

22) $(28x^3 - 12x^2 - 72x - 24) \div (4x + 4)$ $7x^2 - 10x - 8 + \frac{2}{x + 1}$

23) $(5x^4 + 30x^3 - 105x^2 + 40x + 28) \div (5x - 10)$ $x^3 + 8x^2 - 5x - 2 + \frac{8}{5x - 10}$

24) $(4n^3 + 2n^2 + 30n - 20) \div (4n - 2)$ $n^2 + n + 8 - \frac{2}{2n - 1}$