

Name: _____

Date: _____

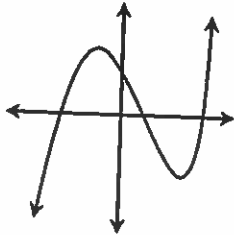
Topic: _____

Class: _____

Main Ideas/Questions

Notes/Examples

TURNING POINTS



- The point(s) at which a polynomial function **switches direction**.
- If the turning point is **higher** than any nearby point, it's called a _____.
- If the turning point is **lower** than any nearby point, it's called a _____.
- Maximum and minimum values of are called _____.
- Turning points define where the function is **increasing** or **decreasing**.

Using the CALCULATOR to find the Turning Points

Find the turning points of the function: $f(x) = x^3 - 6x^2 + 7x + 2$

Step 1: Graph the function. (Enter the function in $y =$, then hit **GRAPH**)

Step 2: Use the **CALC** menu to find the minimum and maximum values.

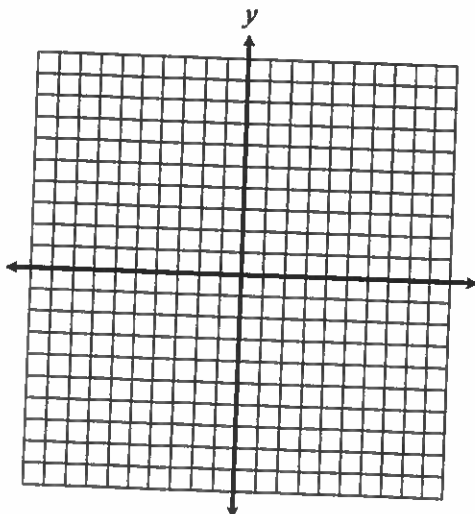
Step 3: Move the cursor to the left bound of the turning point. Hit **ENTER**, then move the cursor to the right bound of the turning point. Hit **ENTER** twice.

Rel. Maximum(s): _____ Rel. Minimum(s): _____

Inc. Intervals: _____ Dec. Intervals: _____

Directions: Graph each polynomial function using a table. Then give its domain, range, turning points, end behavior, and intervals for which the function is increasing and decreasing.

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



Domain: _____

Range: _____

Rel. Maximum(s): _____

Rel. Minimum(s): _____

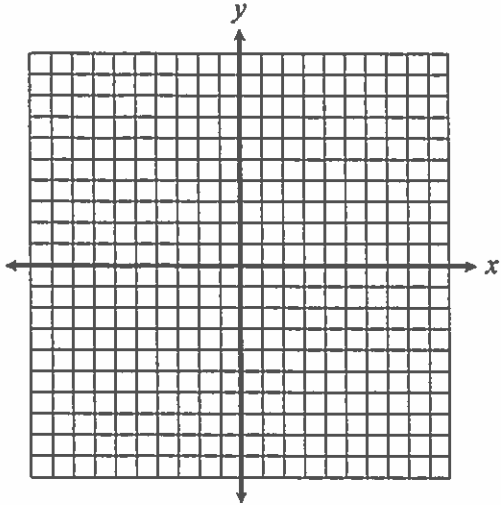
End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____

As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

Inc. Intervals: _____

Dec. Intervals: _____

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



Domain: _____

Range: _____

Rel. Maximum(s): _____

Rel. Minimum(s): _____

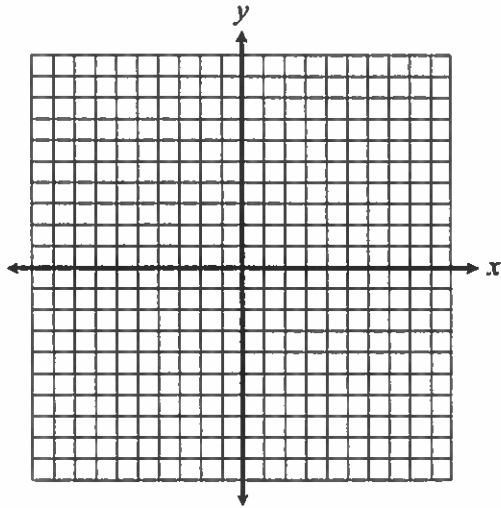
End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____

As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

Inc. Intervals: _____

Dec. Intervals: _____

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



Domain: _____

Range: _____

Rel. Maximum(s): _____

Rel. Minimum(s): _____

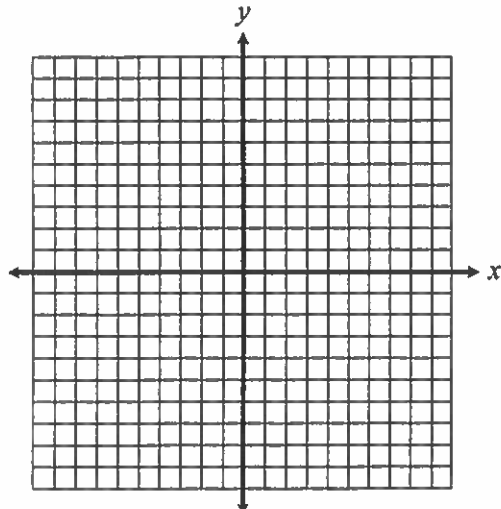
End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____

As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

Inc. Intervals: _____

Dec. Intervals: _____

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



Domain: _____

Range: _____

Rel. Maximum(s): _____

Rel. Minimum(s): _____

End Behavior: As $x \rightarrow \infty$, $f(x) \rightarrow$ _____

As $x \rightarrow -\infty$, $f(x) \rightarrow$ _____

Inc. Intervals: _____

Dec. Intervals: _____