

PreCalculus '14-15

Name: \_\_\_\_\_

Dr. Quattrin

Polynomials Test-- CALCULATOR ALLOWED

Round to 3 decimal places.

Score \_\_\_\_\_

Show all work.

1. Find the zeros of  $y = 3x^3 - x^2 - 12x + 4$ . Show the algebraic work to support the zeros.

2. Find the extreme points of  $y = 3x^3 - x^2 - 12x + 4$ . Show the derivative and algebra to support the critical values.

3. Find the zeros of  $y = x^4 - 29x^2 + 100$ . Show the algebraic work to support the zeros.

4. Find the extreme points of  $y = x^4 - 29x^2 + 100$ . Show the derivative and algebra to support the critical values.

5. The sign pattern for the derivative of  $H(x)$  is given. (a) Is  $x = -4$  at a maximum, a minimum, or neither? Why? (b) Is  $x = 2$  at a maximum, a minimum, or neither? Why?

$$\frac{dH}{dx} \begin{array}{cccc} - & 0 & + & 0 & + & 0 & - \\ \leftarrow & -4 & & -1 & & 2 & \rightarrow \end{array}$$

a)

b)

6. Given this sign pattern for the derivative  $G'(x)$ , what are the intervals of increasing?

$$G'(x) \begin{array}{cccc} + & 0 & - & 0 & + & 0 & - \\ \leftarrow & -6 & & 1/4 & & 3 & \rightarrow \end{array}$$

6. Create a sign pattern for the function  $f'(x)$  if  $f(x)$  is decreasing from  $-\infty$  to  $-7$ , increasing from  $-7$  to  $3$ , and increasing from  $3$  to  $\infty$ . Be sure to label the sign pattern appropriately. Then, determine whether each critical value represents a max, a min, or neither. Explain how you know for each.

7. Find the traits and **sketch**  $y = 3x^3 - x^2 - 12x + 4$ .

Domain:

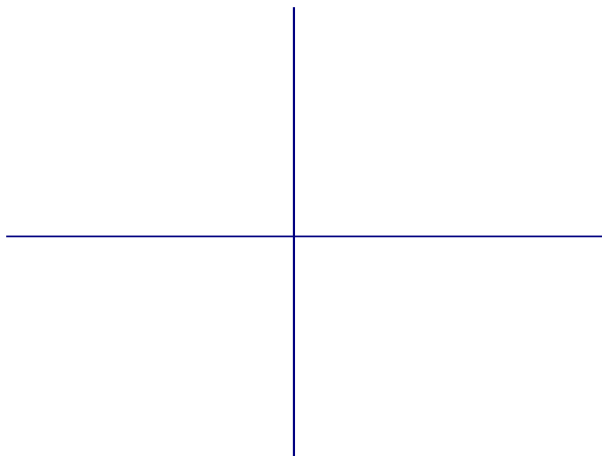
Range:

$Y$  – Int:

End Behavior:

Zeros:

Extreme Points:



8. Find the traits and **sketch** of  $y = x^4 - 29x^2 + 100$ .

Domain:

Range:

$Y$  – Int:

End Behavior:

Zeros:

Extreme Points:

