PRECALCULUS ACCELERATED Fall Practice Final Part I: CALCULATOR REQUIRED NAME

Date

Period \_\_\_\_\_

**Directions:** Complete each of the following NEATLY IN PENCIL in the space provided. Show all work; round at THREE decimal places. Good Luck.

## Multiple Choice (3 pts. each)

1. Give the approximate location of a local maximum for the function  $y = 5x^3 - 7x^2 + 2x - 1$ .

4. The point (3, 5) is on the graph of y = f(x). An equation of the line tangent to the graph of f at (3, 5) is f(x, 5) = f(x) + f(x) +



#### Free Response (10 pts. each)

1. Find the domain and extreme points of  $y = x^3 - x^2 - x + 1$ .

Domain:See Non-Calculator Section. For these problems find<br/>answers the way you would without the calculator but<br/>confirm them using it.

(x-5)(x-2)

2. Find the zeros, POE's, VA's and critical points of  $y = \frac{9 - x^2}{x^2 - 7x + 10}$ .

Zeros: (3,0) (3,0)

POE: None

VA: X=2,5

See Non-Calculator Section. For these problems find answers the way you would without the calculator but confirm them using it.

(3, f(3))

Critical Points:

3. Find the domain, zeros, and extreme points for  $y = \frac{2x^3 + x^2 - 5x + 2}{2x^2 - 5x + 2}$ .

## Domain:

Zeros:	See Non-	-Calc	culat	tor S	Sectior	n. For	these	problems	find
	answers	the	way	you	would	without	t the	calculator	but
Extreme Points:	confirm	them	n us:	ing :	it.				

	A.M.D.G.	
PRECALCULUS ACCELERATED	NAME	
Fall Practice Final		
Part II: NO CALCULATOR ALLOWED	Date	Period

**Directions:** Complete each of the following NEATLY IN PENCIL in the space provided. Show all work; round at THREE decimal places. Good Luck.

## Multiple Choice (3 pts. each)

- 5. Let f be a function defined for all real numbers x. If  $f'(x) = \frac{4-x^2}{x-2}$ , then f is increasing on the interval (a)  $(-\infty, -2)$ (b)  $(-\infty, \infty)$ (c) (-2, 2)(d)  $(-2, \infty)$ (e)  $(-2, 2) \cup (2, \infty)$ 4. 05. What is  $\lim_{h \to 0} \frac{8(x+h)^8 - 8x^8}{h}$ ? (a) 0 (b)  $8x^7$ (b)  $8x^7$ (c)  $64x^7$ (c)  $64x^7$ (c)  $64x^8$ (c) It cannot be determined from the given information
- 9. Given the sign pattern below, at what value of x does f have a local minimum?

$$(a) -4 \qquad (b) -1 \qquad (c) 2 \qquad (d) 1 \qquad (e) no value$$

10. The function *f* is given by  $f(x) = \frac{ax^2 + 12}{x^2 + b}$ . The figure below shows a portion of the graph of *f*. Which of the following could be the values of the constants *a* and *b*?



5. Find all traits listed below of  $y = \frac{9 - x^2}{x^2 - 7x + 10} \cdot = \frac{(3 - x)(3 + x)}{(x - 5)(x - 2)}$ 

$$y' = \frac{(-2x)(x^{2}-7x+10) - (2x-7)(9-x^{2})}{(x^{2}-7x+10)^{2}}$$

Zeros:

*v*-int:

VAs:

POEs:

$$= \frac{-2 \times^{3} + 14 \times^{2} - 20 \times - (18 \times -2 \times^{3} - 16 + 7 \times^{2})}{(x^{2} - 7 \times + 10)^{2}}$$

Critical Values:

$$= \frac{-2x^{3} + (4x^{2} - 20x - (8x + 2x^{3} + 16 - 7x^{2}))}{(x^{3} - 7x + 10)^{2}}$$
  
$$= \frac{7x^{2} - 38x + 63}{(x^{2} - 7x + 10)^{2}}$$
  
below of  $y = \frac{2x^{3} + x^{2} - 5x + 2}{2x^{2} - 5x + 2}$ .  
$$= \frac{(x + 2)(2x - 1)(x - 1)}{(2x - 1)(x - 2)}$$

6. Find all traits listed

Domain:

Zeros:  $(-2, \delta)($ y-int: (0, 1)

VAs:  $\bigvee \beta \notin \chi = 2$ 

POEs: 
$$(\frac{1}{2}, -\frac{5}{2}) \leftarrow \frac{(x+2)(2x-1)(x-1)}{(2x-1)(x-2)}$$
 plug in  $\frac{1}{2}$  after cancelling to get  $-\frac{5}{2}$ 

Critical values

$$\frac{x^2 + x - 2}{x - 2} \implies f = x^2 + x - 2 \qquad g = x - 2$$

$$f' = 2x + 1 \qquad g' = 1$$

