A.M.D.G.

PRECALCULUS ACCELERATED
Ms. Goodell, Mr. Murphy, Mr. Maychrowitz
Spring Final Exam Practice

Name: _____

Date: _____ Period: _____

PART 1: CALCULATOR REQUIRED

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:

1. $\lim_{x\to 0}\dfrac{\sqrt{49-x^2}-7}{9x}=$

   (a) $-\dfrac{1}{9}$
   (b) $-\dfrac{7}{9}$
   (c) 1
   (d) 0
   (e) DNE

2. The graph of $f(x)=\ln(x^2-9)$ has a critical value at

   (a) 3
   (b) 9
   (c) ± 3
   (d) 0
   (e) The graph has no critical values

3. If $\log_4 x+3\log_4 x=9$, then $x=$

   (a) 1.86
   (b) 2.25
   (c) 9
   (d) 22.6
   (e) 256

6. If $y = \dfrac{-1}{3x^2 - 2}$, then $\dfrac{dy}{dx} =$

   (a) $\dfrac{-3x^2 + 6x + 2}{\left(3x^2 - 2\right)^2}$

   (b) $\dfrac{-3x^2 + 6x + 2}{3x^2 - 2}$

   (c) $\dfrac{6x}{\left(3x^2 - 2\right)^2}$

   (d) $\dfrac{6x}{3x^2 - 2}$

   (e) $-\dfrac{1}{6x}$

Free Response:

1. Find the domain, vertical asymptotes, zeroes, and extreme points of $y = \ln\left(2x^2 - 9x + 6\right)$.

   Domain: Vertical Asymptotes:

   Extreme points: Zeroes:

2. Find the domain and extreme points of $y = e^{x^3 - 3x^2}$.

   Domain:

   Extreme points:

3. Find the domain, vertical asymptotes, zeroes, POEs, and extreme points of $f(x) = \dfrac{x^3 - 16x}{x^3 - x^2 - 20x}$.

   Domain: Vertical Asymptotes:

   POEs: Zeroes:

   Extreme points:

4. Find the zeros and extreme points of $y = 2x^3 + 9x^2 - 33x + 14$.

   Zeros:

   Extreme points:

A.M.D.G.

PRECALCULUS ACCELERATED
Ms. Goodell, Mr. Murphy, Ms. Schwarz
Spring Final Exam Practice
PART 2: NO CALCULATOR ALLOWED

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:

7. If $f(x)=\dfrac{x-6}{1-x}$, what is the value of $f'(2)$?

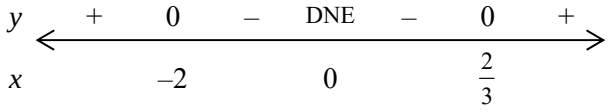
(a) DNE
(b) –5
(c) –4
(d) 1
(e) –1

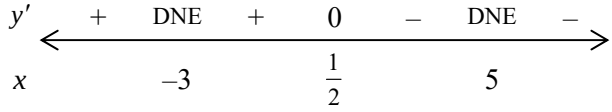
8. Which of the following is true about the function f if $f(x)=\dfrac{x^2+x-2}{2x^2+x-3}$?

I. f has a zero at $x=1$.
II. The graph of f has a POE at $x=1$.
III. The graph of f has a horizontal asymptote at $y=\dfrac{1}{2}$.

(a) II only (b) I and II only (c) I and III only (d) II and III only (e) I, II and III

9. Given these sign patterns, which of the following statements is/are true?





I. There is a zero at $x=\dfrac{1}{2}$

II. The function is increasing on $x\in\left(-\infty,\ -2\right)\cup\left(\dfrac{2}{3},\ \infty\right)$

III. There is a maximum at $x=-2$

(a) I and III (b) II only (c) II and III (d) I, II, and III (e) None of these

10. $\lim_{x\to-\infty}\dfrac{10^8x^5+10^6x^4+10^4x^2}{10^9x^6+10^7x^5+10^5x^3}$

(a) 0 (b) 1 (c) -1 (d) $\dfrac{1}{10}$ (e) $-\dfrac{1}{10}$

Free Response:

5. Find all traits and sketch $y=2x^3+9x^2-33x+14$. **SIGN PATTERN OF THE DERIVATIVE REQUIRED FOR FULL CREDIT!**

Domain:

Zeros:

y-intercept:

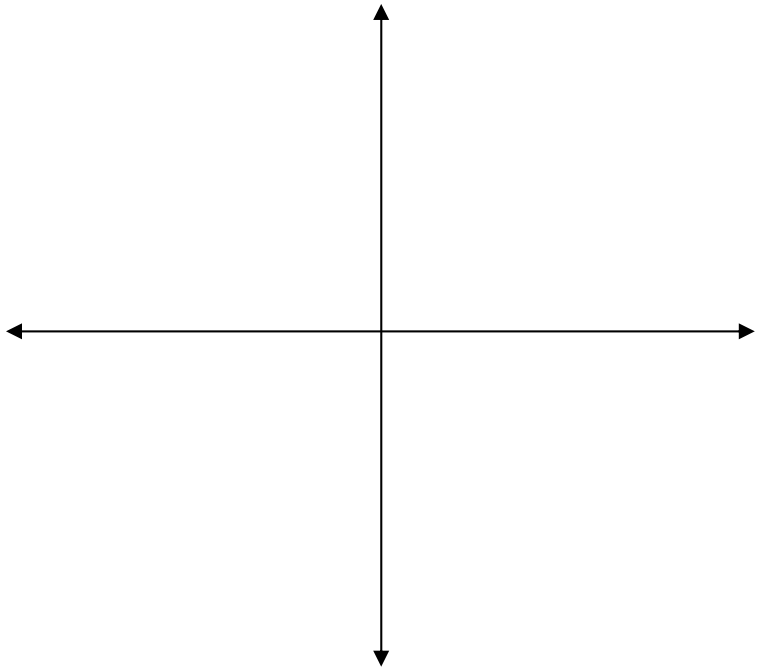
VAs:

EB:

POEs:

Extreme points:

Range:



6. Find all traits and sketch $f(x)=\dfrac{x^3-16x}{x^3-x^2-20x}$. **SIGN PATTERN OF THE DERIVATIVE REQUIRED FOR FULL CREDIT!**

Domain:

Zeros:

y-intercept:

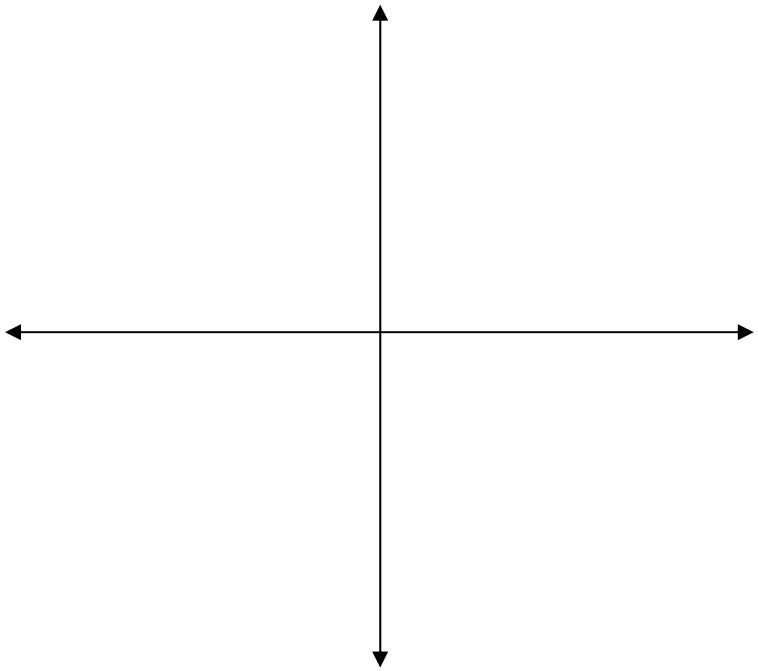
VAs:

EB:

POEs:

Extreme points:

Range:



7. Find all traits and sketch $f(x) = \ln(16 + 6x - x^2)$. **SIGN PATTERN OF THE DERIVATIVE REQUIRED FOR FULL CREDIT!**

Domain:

Zeros:

y-intercept:

VAs:

EB:

POEs:

Extreme points:

Range: