

# PRACTICE Test I

MA141-008

09/12/2018 Name: \_\_\_\_\_

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**Read all of the following information before starting the exam:**

- Complete each problem. Show all of your work clearly and in order and justify your answers, as partial credit will be given when appropriate and there may be NO credit given for problems without supporting work. **Circle or otherwise indicate your final answers your final answers.** All answers should be completely simplified, unless otherwise stated.
- You may copy your final answers to this sheet, but remember that you will be graded for your work and not for the final answer.

**You may not use calculator.**

1. Find the domain of  $\frac{1}{\sin x - 1}$
2. Find the inverse functions to the following equations and state the domain  $D$  and range  $R$  of both:
  - (a)  $f(x) = 10e^{-x^3}$        $f^{-1}(x) =$  \_\_\_\_\_,  $D =$  \_\_\_\_\_,  $R =$  \_\_\_\_\_
  - (b)  $f(x) = \log_{10}(x^2 + 10)$        $f^{-1}(x) =$  \_\_\_\_\_,  $D =$  \_\_\_\_\_,  $R =$  \_\_\_\_\_
  - (c)  $f(x) = \frac{x}{1+x}$        $f^{-1}(x) =$  \_\_\_\_\_,  $D =$  \_\_\_\_\_,  $R =$  \_\_\_\_\_
  - (d)  $f(x) = \frac{1}{1+e^{-x}}$        $f^{-1}(x) =$  \_\_\_\_\_,  $D =$  \_\_\_\_\_,  $R =$  \_\_\_\_\_
3. Find the following limits or show they do not exist. Show your work in detail.

(a)  $\lim_{x \rightarrow 1} \frac{x^2 + 2x - 3}{x^2 - x} =$

(b)  $\lim_{x \rightarrow 0} \frac{\sqrt{1-x^2} - 1}{x^2} =$

(c)  $\lim_{x \rightarrow -6} \frac{2x+12}{|x+6|} =$

4. Use squeeze theorem to find the following limits

(a)  $\lim_{x \rightarrow 0} x^2 e^{\sin \frac{1}{x}}$

(b)  $f(x) = -\frac{x^2}{4} - \frac{x}{2}$  and  $h(x) = \frac{x^2}{3} + \frac{2x}{3} + \frac{2}{3}$ . What can you say about  $\lim_{x \rightarrow -1} g(x)$  if it is known that  $f(x) \leq g(x) \leq h(x)$  for  $x$  near  $-1$ .

## Good luck!