

# V1

1	2	3	4	5	6
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Last Name: \_\_\_\_\_

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

ID: \_\_\_\_\_ Section: \_\_\_\_\_

Math 150A Midterm #1. September 12, 2003

**Attention!** Please, note that this is the closed book test. You are not allowed to use graphing calculator. Simple calculators are allowed. Please, show all important steps in you solution but do not make your solution excessively long.

1. (15pt) Find the domain of the function

$$f(x) = \frac{1}{x\sqrt{1-x^2}}.$$

2

2. (20pt) Prove by  $\varepsilon$ - $\delta$  argument that

$$\lim_{x \rightarrow 2} (x^2 - 3x) = -2.$$

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3. (15pt) Evaluate limit

$$\lim_{t \rightarrow 0} (1 + \cot t)t$$

4

4. (20pt) Evaluate the limit

$$\lim_{t \rightarrow 0} \frac{\sqrt{t^2 + t} - \sqrt{t}}{t}.$$

5. (15pt) Find limits at infinity or indicate why the limit does not exist.

$$\lim_{x \rightarrow +\infty} \frac{3x}{x + \sqrt{x^2 - 2x + 4}}, \quad \lim_{x \rightarrow -\infty} \frac{3x}{x + \sqrt{x^2 - 2x + 4}}.$$

6. Find both infinite limits

$$\lim_{x \rightarrow 2^+} \frac{1}{x - \sqrt{x+2}}, \quad \lim_{x \rightarrow 2^-} \frac{1}{x - \sqrt{x+2}}.$$