

Math 171  
Fall 2005

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## Exam 1

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

TA's Name \_\_\_\_\_

Section Time \_\_\_\_\_

No calculators, notes, or books are allowed.  
**You must show all your work, and explain your reasoning to receive credit for your answers.**

**Work the problems in an order that will maximize your score, and check your answers whenever possible.**

*Good luck!*

Problem	Score
1	
2	
3	
4	
5	
Total	

1. [15 points] Solve the equation  $(4x + 1)^2 = (2x - 1)(8x - 2)$ .

2. [15 points] Solve the inequality

$$|-2x + 4| > 5.$$

Express your answer in interval form.

3. Sketch the graphs of the following functions. Label the  $x$ - and  $y$ -intercepts (including their coordinates) and any asymptotes.

(a) [15 points]  $f(x) = (x + 2)^2 - 4$

3. (Continued)

(b) [15 points]  $f(x) = \frac{x}{x-3}$ .

4. [20 points] Find the domain of the function

$$f(x) = \sqrt{\frac{x^2 - 2x - 3}{x + 2}}.$$

5. Suppose a cannonball is shot out of a cannon at time  $t = 0$ , and that the height above the ground of the cannonball is described by the equation

$$h(t) = -4t^2 + 16t + 20.$$

- (a) [10 pts] At what time does the cannonball hit the ground? (Show your work and explain what you're doing.)

- (b) [10 pts] At what time does the cannonball reach its maximum height above the ground? (Again, show your work and explain what you're doing.)