

## First Midexam of 211, Oct 20, 2006

Note: You need to show your works in a clear way. A single answer will not gain any credit.

Name (Print):

Signature:

Student ID:

Section:

1.(Points)

2.(Points)

3.(Points)

4.(Points)

Total Points

I. (30 points.) For the function  $f(x) = \frac{x^2 - x - 6}{x^2 + x - 12}$ , find all asymptotes.

**II.** (20 points.) Use the definition to find  $f'(x)$  if  $f(x) = \sqrt{x^2 + 1}$ .

III. (30 points.) Suppose that you had \$2,000 in an account and the annual interest is 2 percentage. (Leave your answer as an exact number, e.g.,  $\ln 4$ ,  $3.3^7$  etc)

(a). How much money will you have at the end of the 2nd years if the interest is compounded monthly?

(b). How long will it take for the account to get doubled if the interest is compounded continuously?

IV. (20 points.) Find the equation of the line tangent to the graph of " $y = -2\sqrt{x} + \frac{2}{3}x - \frac{2}{3}$ " at the point  $(1, -2)$ .