

ÇANKAYA UNIVERSITY
DEPARTMENT OF MATHEMATICS
November 6, 2006

Math 109
Business Mathematics
First Midterm

Duration: 90 min.
Show all your work

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

$$f(x) = \frac{1}{\sqrt{5+x}} + \sqrt{3-x}$$

2. Given $f(x) = -2x^2 - 10x - 13$

(a) (10 pts.) Write $f(x)$ in the form $f(x) = a(x - h)^2 + k$

(b) (15 pts.) Graph $f(x)$

3. (a) (10 pts.) Calculate

$$\frac{6 - 5i}{2 - i} + i(2 - 3i)$$

(b) (10 pts.) Evaluate

$$i^{135}$$

4. (10 pts.) Find x so that

$$\frac{3}{2} \log_b \frac{1}{4} - \frac{2}{3} \log_b 8 + \log_b 2 = \log_b x$$

(a) (15 pts.) Solve:

$$\log_{10}(2x + 6) - \log_{10}(x + 1) = \log_{10} x$$

5. (20 pts.) Solve the equation

$$4(w^2 - 1)^2 - 16(w^2 - 1) + 15 = 0.$$