

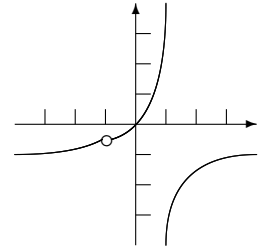
**Math 163A A01 Fall 2009****Guide for Test 1**

Here are some sample questions from Sections 1-1, 1-2, 2-1, 2-2, 2-3, 2-4, and 2-5. Some topics that we covered are not represented by these questions, but are still fair game.

- Find the equation for the line that passes through the point  $(-1, 0)$  and the point  $(1, 4)$ .
  - Find the equation for the line that passes through the point  $(2, -4)$  and has slope  $-2$ .
  - Find the point where these two lines intersect. (Solve for it; no credit for guessing.)
  - Graph both lines.

- Given the graph of  $f(x)$  at right, graph

- $-3f(x)$
- $f(x) - 3$
- $f(x - 3)$
- $f(-3x)$



- Consider the parabolic function  $f(x) = x^2 - 10x + 21$ .
  - Find its  $x$ -intercepts (if it has any).
  - Find its axis and vertex.
  - Graph it.
- You are in a club that is raising money by each selling advertizing on your t-shirts, and then wearing them around campus. The other people find that if they charge  $\$p$  per ad, then they sell  $N(p) = -Ap + B$  ads. ( $A > 0$  and  $B > 0$  are known constants.) How much should you charge per ad in order to bring in the maximum amount of money? What is the maximum amount?
- A person invests  $\$5,000$  in an account that pays interest at an annual rate of  $4.15\%$ . How much interest will this money earn in four years if the interest is compounded
  - monthly?
  - continuously?
- Solve for  $x$ . Show your work.
  - $e^{x+1} = 7$ .
  - $\log_3\left(\frac{x}{2}\right) = 5$ .
  - $4^{x-6} = 16^{2x+3}$ .
  - $\log(x - 5) + \log(x - 2) = 1$
- Use the properties of logarithms to simplify as much as possible.
  - $\log_9(3)$ .
  - $\log_4\left(\frac{4a}{b^3}\right)$ .
- Graph the curves  $y = \log_2(x)$  and  $y = 2^x$ . Mark and label three points on each curve.