Math 131 - January 27, 2015
Solutions

Warm-up Problems

1. Determine your speed in each of the situations:

   (a) You jump in your car at 10AM, drive 100 miles and arrive at your destination at noon.
   Solution: Possible answer: Average Speed is 50 miles per hour

   (b) You leave your dorm room at 10PM for a party 2 miles away. You walk there and arrive at 10:30PM.
   Solution: Possible answer: Average Speed is 4 miles per hour

2. Find the slope between the line determined by the given points:

   (a) $(2, 3)$ and $(5, 10)$
   Solution: $\frac{7}{3}$

   (b) $(10, 13)$ and $(101, 47)$
   Solution: $\frac{34}{91}$

Lecture Problems

3. Compute the following limits. Be sure to try to do these graphically, with a table, and algebraically.

   (a) $\lim_{x\to 4} \frac{1}{x} = \frac{1}{4}$

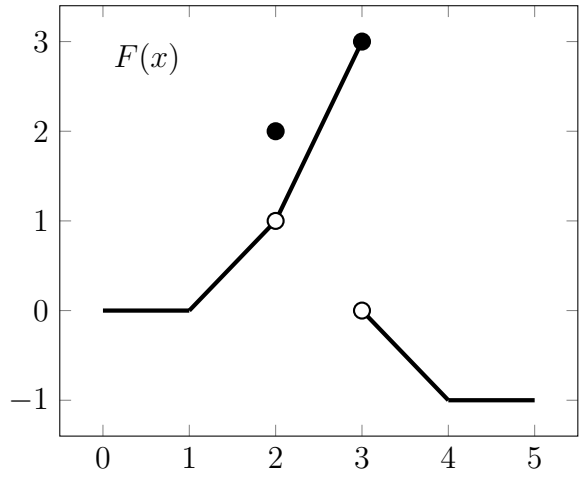
   (b) $\lim_{h\to 1} \frac{h^2-h}{h-1} = 1$

   (c) $\lim_{h\to 0} \frac{(1+h)^2-1}{h} = 1$

   (d) $\lim_{x\to -1} \frac{x}{x+1} = \pm\infty$

   (e) $\lim_{x\to -1} \frac{x^2+x}{x+1} = -1$

4. Consider the graph of the function $F(x)$ below.



(a) $F(0) = 0$
(b) $F(1) = 0$
(c) $F(2) = 2$
(d) $F(3) = 3$
(e) $F(4) = -1$
(f) $F(5) = -1$

5. Same graph and function as the previous problem.

(a) $\lim_{x \to 1} F(x) = 0$
(b) $\lim_{x \to 2} F(x) = 1$
(c) $\lim_{x \to 3} F(x) = \text{DNE}$
(d) $\lim_{x \to 4} F(x) = -1$

6. Same graph and function.

(a) $\lim_{x \to 1^-} F(x) = 0$
(b) $\lim_{x \to 1^+} F(x) = 0$
(c) $\lim_{x \to 2^-} F(x) = 1$
(d) $\lim_{x \to 2^+} F(x) = 1$
(e) $\lim_{x \to 3^-} F(x) = 3$
(f) $\lim_{x \to 3^+} F(x) = 0$
(g) $\lim_{x \to 4^-} F(x) = -1$
(h) $\lim_{x \to 4^+} F(x) = -1$