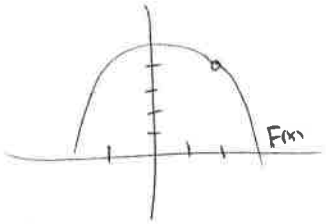
Math 119 HW #1

Section 3.1 #6, 8, 31, 41, 48

Section 3.2 #4

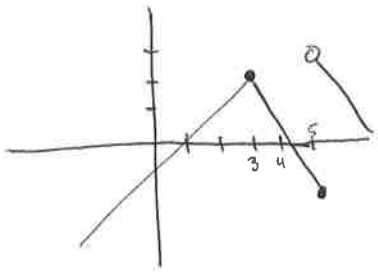
3.1 #6



$\lim_{x \to 2} F(x) = 4$ (curve approaches $y=4$ near $x=2$)

$\lim_{x \to -1} F(x) = 4$ (curve approaches $y=4$ near $x=-1$ also)

3.1 #8



$\lim_{x \to 3} g(x) = 2$ curve approaches $y=2$ near $x=3$

$\lim_{x \to 5} g(x)$ DNE curve splits at $x=5$

3.1 #31

$$\lim_{x \to 3} \frac{x^2-9}{x-3} = \lim_{x \to 3} \frac{(x-3)(x+3)}{x-3} = \lim_{x \to 3} x+3 = 6$$

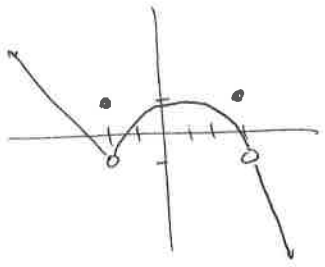
3.1 #41

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

$$= \lim_{h \to 0} \frac{2hx+h^2}{h} = \lim_{h \to 0} 2x+h = 2x$$

3.1 #48 $\lim_{x\to\infty} \frac{2x^2-1}{3x^4+2} = 0$ by on bottom is bigger

3.2 #4



discontinuous at $a=-2$, $a=3$

$a=-2$: ~~$\lim_{x\to -2}$~~ $f(-2)=1$

$\lim_{x\to -2^-} f(x) = -1$

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

$\lim_{x\to -2} f(x) = -1$

$a=3$: $f(3)=1$

$\lim_{x\to 3^-} f(x) = -1$

$\lim_{x\to 3^+} f(x) = -1$

$\lim_{x\to 3} f(x) = -1$.