4 Sep Recitation Worksheet for MA141

$\text{sign}(x)$ $sign(x)$

1. Find $f(a)$, $\lim_{x\to a} f(x)$ for the following $f(x)$ and a.

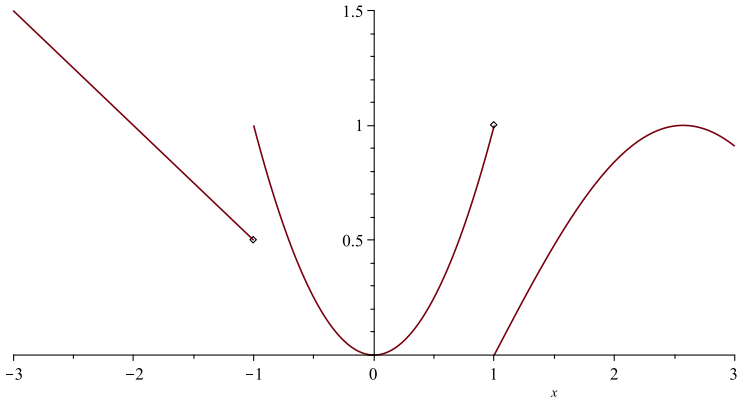
   (a) $f(x) = 3x + 5$, $a = 0, 2, b$

   (b) $f(x) = 2e^{2x} + 1$, $a = 0, 1$

   (c)
   $$f(x) = \begin{cases} x^2 + 1 & x \le 0 \\ x^3 & x > 0 \end{cases}$$
   $a = 0, 1$.

   (d)
   $$f(x) = \begin{cases} \sin(x) + 4 & x \neq 2\pi \\ -1 & x = 2\pi \end{cases}$$
   $a = 0, 2\pi$.

2. Let f be defined as
   $$f(x) = \begin{cases} -x/2 & x < -1 \\ x^2 & -1 \le x < 1 \\ \sin(x-1) & x \ge 1 \end{cases}.$$
   Find $f(a)$, $\lim_{x\to a^-} f(x)$, $\lim_{x\to a^+} f(x)$, and $\lim_{x\to a} f(x)$ for $a = -2, -1, 0, 1, 2$



3. Find the following limits.

   (a) $\lim_{x\to 5} \frac{-4x-5-x^2}{x-5}$

   (b) $\lim_{x\to 1} \frac{x^4-1}{x-1}$

   (c) $\lim_{x\to 3} \frac{x^2-5x+6}{x^2-2x-3}$

   (d) $\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2}$

(e) $\lim_{x \to -3} \frac{x^2}{x+3} + 1 - \frac{6-x}{x+3}$

(f) $\lim_{x \to 0} \frac{1}{x}$