MATH 113 – QUIZ 2 – 6 FEBRUARY 2007

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

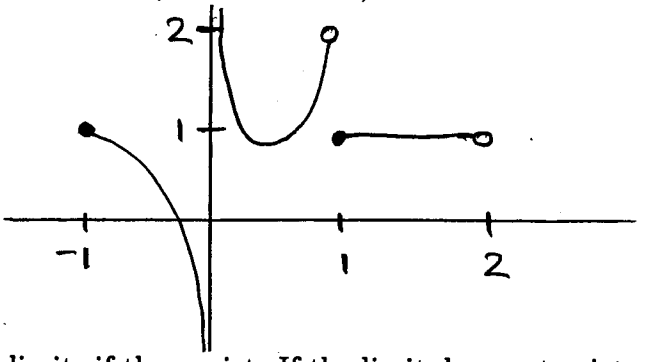
1. (1 pt. each) Consider the function $f(x)$ whose graph is sketched below. Determine whether each of the following statements is true or false (CIRCLE ONE).

(a) $\lim_{x\to 1^-} f(x) = 1.$ T (F)

(b) $\lim_{x\to 1^+} f(x) = 1.$ (T) F

(c) $\lim_{x\to 0^-} f(x) = -\infty.$ (T) F

(d) $\lim_{x\to 0} f(x) = \infty.$ T (F)



2. (2 pts. each) Evaluate each of the following limits if they exist. If the limit does not exist then so state. If the limit is infinite say whether it is $+\infty$ or $-\infty$.

(a) $\lim_{x\to 4^+} \sqrt{4-x}$ DOES NOT EXIST

because $\sqrt{4-x}$ is not defined for $x > 4$.

(b) $\lim_{y\to 3^-} \frac{4+y}{y^2-3y} = \lim_{y\to 3^-} \frac{4+y}{y(y-3)} = -\infty$

For $y < 3$ but close to 3,

(i) $4+y > 0$ (ii) $y > 0$ (iii) $y-3 < 0$

$\therefore \frac{4+y}{y(y-3)} < 0$

(c) $\lim_{x\to\infty} \frac{9x^4+x+1}{2x^4+5x+6} = \lim_{x\to\infty} \frac{9x^4}{2x^4} = \frac{9}{2}$