Math 105, Fall 2013

Worksheet 3, Tuesday, September 24, 2013

1. Compute the following limits. Justify your answers. Be clear if they equal a value, or $+\infty$, $-\infty$, or DNE.

   (a) $\lim_{x\to 2} \dfrac{x^2+6x+8}{x+2}$

   (b) $\lim_{x\to 2} \dfrac{x^2+6x+8}{x-2}$

   (c) $\lim_{x\to 2} \dfrac{x^2-6x+8}{x-2}$

   (d) $\lim_{x\to 2} \dfrac{x^2+5x-14}{x^2-4x+12}$

   (e) $\lim_{x\to 2} \dfrac{x^2+5x-14}{x^2-8x+12}$

   (f) $\lim_{x\to -3} \dfrac{x^2+4x+3}{x^2-2x-15}$

   (g) $\lim_{x\to -3} \dfrac{x^2+4x+3}{x^2+6x+9}$

   (h) $\lim_{t\to 1} \dfrac{t-1}{g(t^2)-3}$ where $g(t)=2t+1$.

   (i) $\lim_{x\to 0} \dfrac{x+1}{x(x+2)}$

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

   (k) $\lim_{x\to -5} \dfrac{\dfrac{1}{4-x}-\dfrac{1}{9}}{x+5}$

   (l) $\lim_{x\to -3} \dfrac{x^2-4x-21}{\sqrt{1-x}-2}$

(m) Let $g(x) = \sqrt{x}$. Compute $\lim_{s \to 1} \dfrac{g(s^2+8)-3}{s-1}$

(n) Let $f(x) = \dfrac{1}{x}$. Compute $\lim_{t \to 2} \dfrac{f(t-1)-2f(t)}{t^2-4}$

(o) $\lim_{x \to 4} \dfrac{|x-4|}{x-4}$

(p) $\lim_{x \to -1} \dfrac{1}{|x+1|}$ (Hint: what's the graph of this function?)

(q) $\lim_{x \to 3} \dfrac{\dfrac{x}{x-2} - \dfrac{x+6}{x}}{x-3}$

(r) $\lim_{x \to 3} -\dfrac{1}{(x-3)^2}$

Turn in your solutions