Study Guide 2

Limits

1. Compute the following limits.

(a) $\lim_{x\to 3} \dfrac{x^3-8}{x-2} =$

(b) $\lim_{x\to 2} \dfrac{x^3-8}{x-2} =$

(c) $\lim_{x\to \infty} \dfrac{x^3-8}{x-2} =$

(d) $\lim_{y\to \infty} \dfrac{5y^4+300y^2-60y+1000}{20000-3y+4y^3-0.01y^4} =$

(e) $\lim_{x\to 0} \dfrac{\sqrt{4+x}-2}{x} =$

(f) $\lim_{t\to 2^+} \dfrac{t-2}{\sqrt{t-2}} =$

(g) $\lim_{x\to 0^-} \dfrac{x}{|x|} =$

(h) $\lim_{x\to 0^+} \dfrac{x}{|x|} =$

Note: The last 3 limits are one-sided limits.

2. Express the following limits in terms of the variable x.

(a) $\lim_{h\to 0} \dfrac{5(x+h)-5x}{h} =$

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

(c) $\lim_{h\to 0} \dfrac{[2(x+h)^2+3(x+h)]-[2x^2+3x]}{h} =$