

MATH 210: 9-4 WORKSHEET

(1) Let $f(x) = x^3 - 3x^2 + 4$. Calculate:

$$\lim_{x \rightarrow 0} f(x)$$

$$\lim_{x \rightarrow 1} f(x)$$

$$\lim_{x \rightarrow -1} f(x)$$

(2) Let

$$g(x) = \frac{2x + 4}{(x - 1)(x + 3)^2}.$$

Calculate:

$$\lim_{x \rightarrow 0} g(x)$$

$$\lim_{x \rightarrow 1} g(x)$$

$$\lim_{x \rightarrow -2} g(x)$$

$$\lim_{x \rightarrow -3} g(x)$$

(3) Calculate

$$\lim_{h \rightarrow 0} \frac{\frac{1}{x-h} - \frac{1}{x}}{h}.$$

[Hint: Use the conjugate trick!]