Quiz #1

Question (10 points total)

(a) Evaluate

$$\lim_{x \to -2} \frac{x^2 + 2x}{x + 2}.$$

(b) Evaluate

$$\lim_{x \to \infty} \left(\frac{3}{x} - \frac{2x^2}{x^2 + 1} \right).$$

Solution:

(a)

$$\begin{aligned} \lim_{x \to -2} \frac{x^2 + 2x}{x + 2} &= \lim_{x \to -2} \frac{x(x+2)}{x+2} \\ &= \lim_{x \to -2} x \\ &= -2. \end{aligned}$$

(b)

$$\begin{aligned} \lim_{x \to \infty} \left(\frac{3}{x} - \frac{2x^2}{x^2 + 1} \right) &= \lim_{x \to \infty} \left(\frac{3}{x} \right) - \lim_{x \to \infty} \left(\frac{2x^2}{x^2 + 1} \right) \\ &= 0 - \lim_{x \to \infty} \left(\frac{2x^2}{x^2} \right) \\ &= 0 - \lim_{x \to \infty} 2 \\ &= -2. \end{aligned}$$

Note: Points will be deducted for incomplete or incorrect answers. Points will also be deducted for not fully or properly showing your work.