1 Show how to evaluate the limits. Be sure to justify each step with a particular theorem or rule.

(A) \( \lim_{x \to 0} \frac{\sin^2(x)}{1 - \cos(x)} \)

(B) \( \lim_{x \to 0} \frac{\cos^2(x)}{1 - \sin(x)} \)

(C) \( \lim_{x \to \infty} \frac{x^{100}}{x} \)

(D) \( \lim_{x \to \infty} \frac{(\ln(x))^{100}}{x} \)

(E) \( \lim_{x \to \infty} \frac{\sqrt{x^2 + 1}}{x} \).

Section 4.4 # 2, 4, 6, 9

Section 4.5 #2, 7

Section 5.2 #5

Section 5.3 #5, 10