DATE: _____

Infinite Limits – Multiple Choice

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1. The graph of $y = \frac{3x+9}{x^2-9}$ has

(A) a vertical asymptote a $x = 3$

(B) a horizontal asymptote at $y = \frac{1}{3}$

(C) a removable discontinuity at $x = 3$

(D) a vertical asymptote a $x = -3$

(E) none of these

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2. Identify the vertical asymptotes for $f(x) = \frac{x^2+3x-4}{x^2+x-2}$

(A) $x = -2$, $x = 1$

(B) $x = -2$

(C) $x = 1$

(D) $y = -2$, $y = 1$

(E) $y = -2$

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3. How many vertical asymptotes exist for the function $f(x) = \frac{1}{2\sin^2 x - \sin x - 1}$ in the open interval $0 < x < 2\pi$?

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3 **(E)** 4

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4. $\lim_{x \to 0} \frac{\tan\left(\frac{\pi}{6}+x\right) - \tan\left(\frac{\pi}{6}\right)}{x} =$

(A) $\frac{\sqrt{3}}{3}$ **(B)** $\frac{4}{3}$ **(C)** $\sqrt{3}$ **(D)** 0 **(E)** $\frac{3}{4}$