Lecture Four Practice

Practice problems
for Lecture Four

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Abstract. *Practice problems for Lecture Four Content*

Problem. **1** : Determine if the limit approaches a finite number, ∞, $-\infty$, or does not exist. (If the limit does not exist, write DNE)

$$\lim_{x \to \infty} \frac{\sqrt{49x^2 - 4} + 3}{x + 3} = \boxed{} \; \boxed{?}$$

Problem. **2** : Compute the following limit: $\displaystyle\lim_{x \to +\infty} \frac{5x^3 - 6x^2 - 9x - 10}{4x^4 - 3x^2 + 4x + 7} = \boxed{} \boxed{?}$.

Problem. **3** : Determine the limit.

$$\lim_{x \to 9^+} \ln((x + 1)(x - 9)) = \boxed{} \; \boxed{?}$$

Problem. **4** : Determine the limit.

$$\lim_{x \to 7^+} \frac{3}{x - 7} - \ln(x - 7) = \boxed{} \; \boxed{?}$$

Problem. 5 : Consider the rational function $f(x) = \frac{x^2+2x}{x^2-4}$. Identify any vertical asymptotes.

$$x = \boxed{}\;\boxed{?}$$

Problem. 6 : Consider the rational function $f(x) = \frac{x^2-9x+20}{x^2-3x+2}$. Identify any vertical asymptotes. (**Note:** Input answers below in increasing values of x; ie if your answers were $x = -3$ and $x = 22$, then the left answer box would be -3 and the right would be 22).

$$x = \boxed{}\;\boxed{?} \qquad x = \boxed{}\;\boxed{?}$$

Problem. 7 : Consider the rational function $f(x) = \frac{x^2-7x+12}{x^3-5x^2+3x+9}$. Identify any vertical asymptotes. (**Note:** Input answers below in increasing values of x; ie if your answers were $x = -3$ and $x = 22$, then the left answer box would be -3 and the right would be 22).

$$x = \boxed{}\;\boxed{?} \qquad x = \boxed{}\;\boxed{?}$$