

MTH 1125 - Test #1

SUMMER 2006

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Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. Compute: $\lim_{x \rightarrow 2} \frac{x^2 - x - 2}{x - 2} =$

2. Compute: $\lim_{x \rightarrow 3} \frac{x^2 + 5}{x^2 - 3} =$

3. Compute: $\lim_{x \rightarrow 5} \frac{x^2 + 5}{x^2 - 3x - 10} =$

4. $f(x) = 3x^2 + 2x - 5$. Compute $f'(x)$ *using the definition of derivative* (i.e., using the “limiting process”).

5. $f(x) = \frac{4x+5}{2x-2}$. Find all vertical and horizontal asymptotes. Graph $f(x)$.

6. Compute: $\frac{d}{dx} [5x^4 + 3x^3 + 8x^2 + 3x - 7 + \sqrt{x}] =$

7. Compute: $\frac{d}{dx} [(3x^4 + 2x^2 + 5)(8x^5 - 2x^3)] =$

8. Compute: $\frac{d}{dx} \left[\frac{\sin(x)}{(5x^2 + 2x + 2)} \right] =$

Extra Credit Compute: $\lim_{x \rightarrow 2} \frac{\sqrt{x+7}-3}{x-2} =$