

MTH 1125 Test #1

SUMMER 2018

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Name _____

Instructions. Show CLEARLY how you arrive at your answers.

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

2. Compute: $\lim_{x \rightarrow -1} \frac{x^2+4x+3}{x^2-x-2} =$

3. Compute: $\lim_{x \rightarrow 1} \frac{x-5}{x^2-5x+4} =$

4. $f(x) = 3x^6 - 3x^5 + 4x^3 - 6x^2 + 9x - 5$; Compute: $f'(x)$.

5. Find the asymptotes and graph: $f(x) = \frac{x^2+2x-3}{x^2-2x-3}$

6. Compute: $\lim_{x \rightarrow 2} \frac{\sqrt{x+2}-2}{x-2} =$

7.

$x =$	$f(x) =$	$x =$	$f(x) =$
2.5	-10.1	3.5	10.1
2.9	-100.8	3.1	100.8
2.99	-1,000.3	3.01	1,000.3
2.999	-10,000.3	3.001	10,000.3
2.9999	-100,000.9	3.0001	100,000.9

Based on the information in the table above, do the following:

(a) $\lim_{x \rightarrow 3^-} f(x) =$

(b) $\lim_{x \rightarrow 3^+} f(x) =$

(c) Graph $f(x)$

8. Compute: $\lim_{x \rightarrow -\infty} \frac{8x^5 + 5x - 2x}{2x^4 - 5x^2 - 5} =$

9. Compute: $\frac{d}{dx} [4 \sin(x) + 12 \cos(x)] =$

10. $f(x) = 6x^2 - 2x$; compute $f'(x)$ **using the definition of derivative.** (i.e., compute $f'(x)$ using the “limiting process.”)

11. Compute: $\frac{d}{dx} [(x^3 + 2x) \sin(x)] =$

12. Compute: $\frac{d}{dx} \left[\frac{\cos(x)}{4x^3 + 2x^2} \right] =$