

# Math 2143 - Brief Calculus with Applications

## Extra Limit Problems

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Compute the following limits.

1.

$$\lim_{x \rightarrow 0} \left( \frac{1}{3x} - \frac{1}{x(x+3)} \right)$$

2.

$$\lim_{s \rightarrow 0} \frac{1 - \sqrt{s^2 + 1}}{s^2}$$

3.

$$\lim_{x \rightarrow 1} \frac{x^6 - 64}{x - 2}$$

4.

$$\lim_{x \rightarrow 0} \frac{\sqrt{(1+ax)(1+bx)} - 1}{x}$$

5.

$$\lim_{t \rightarrow 2} \frac{t^2 - 4}{3 - \sqrt{t^2 + 5}}$$

6.

$$\lim_{x \rightarrow 2} \frac{\sqrt{2} - \sqrt{x}}{x - 2}$$

7.

$$\lim_{x \rightarrow 0^+} \left( \frac{1}{\sqrt{x}} - \frac{1}{\sqrt{x^2 + x}} \right)$$

8.

$$\lim_{h \rightarrow 0} \frac{\frac{1}{(x+h)^3} - \frac{1}{x^3}}{h}$$

9.

$$\lim_{p \rightarrow 4} \frac{2p^2 - 32}{p^3 - 4p^2}$$

10.

$$\lim_{y \rightarrow 0} \left( \frac{1}{y} \left( \frac{1}{4+y} - \frac{1}{4} \right) \right)$$