

# Math 131 - Homework 5

April 28, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due May 5.

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1. (2 points) Assume  $k > 0$  and evaluate the limit:  $\lim_{x \rightarrow \infty} \frac{\ln x}{x^k}$

2. (2 points) Evaluate the limit:  $\lim_{x \rightarrow 0} \frac{e^x - x - 1}{x^2}$

*Turn over.*

3. (4 points) Evaluate each integral.

(a)  $\int \frac{3x^2 + 2}{x^2} dx$

(b)  $\int (e^x + 3x + \sin x) dx$

4. (2 points) Solve the initial value problem.

$$f'(x) = \cos x + \sec^2 x, \quad f\left(\frac{\pi}{4}\right) = 2 + \frac{\sqrt{2}}{2}$$