

# Math 131 - Quiz 5

November 3, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This quiz is due November 10.

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1. (2 points) Find the linearization of  $g(x) = \sqrt{x^3 + 9}$  at the point where  $x = 3$ . Then use your linearization to approximate  $g(2.9)$ .

2. (3 points) Use calculus techniques to find the absolute extreme values of  $f(x) = 3x^4 + 4x^3 - 72x^2$  on the interval  $[-5, 5]$ .

*Turn over.*

3. (2 points) Find the critical points of  $f(x) = \sqrt[3]{x^2 - x}$ .

4. (3 points) Use calculus techniques to find open intervals on which  $f(x) = \frac{1}{3}x^3 - \frac{5}{2}x^2 - 24x + 113$  is increasing/decreasing. Also identify the relative extreme values.