

Name: _____ / 25

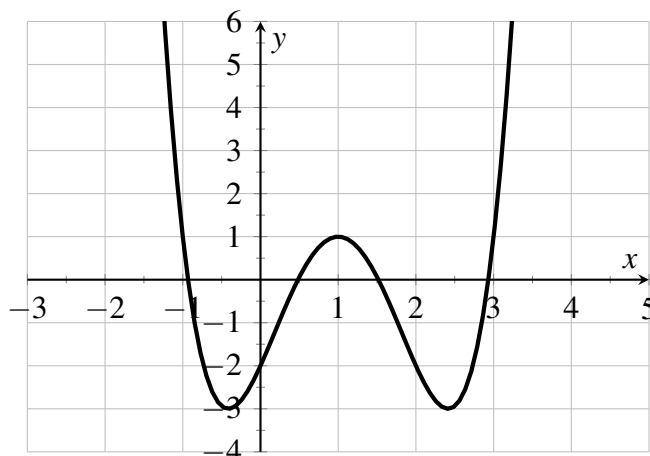
There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. [4 points] The function $C(y) = \frac{18(1+y)}{2y+5}$ models a herd of caribou where C is the number of caribou in hundreds and y is measured in years starting in the year 2000.

a. Observe that $C(10) = 7.92$. Interpret this fact in the context of the problem. To earn full credit your answer should be a complete sentence and must include units.

b. It can be shown that $C'(10) = 0.0864$. Interpret this fact in the context of the problem. To earn full credit your answer should be a complete sentence and must include units.

2. [4 points] The function $y = H(x)$ is graphed below. Sketch the graph of $H'(x)$ on the same set of axes.



3. [9 points] Find the derivative of $f(x) = \frac{3}{x}$ using the limit definition of the derivative. No credit will be given for an answer that uses the power rule.

4. [8 points] For each function below, find its derivative. You may use any method you like. You do not have to simplify your answer.

a. $f(x) = \frac{x^3 + e^2}{x+1}$

b. $g(x) = \sqrt{x}(5 + \sqrt{x})$