

MATH 231
Quiz 7

Name _____
November 6, 2001

WRITE CLEARLY AND SHOW ALL YOUR WORK. YOU MAY USE A CALCULATOR.

1. Find the domain of the function $f(x) = \frac{1}{\sqrt{5-x^2}}$. Write your answer in interval notation.

2. Show the function $f(x) = \frac{x^{-3} - x^{-2}}{x^{-1} - 1}$ is a power function by writing it in the form $f(x) = Ax^k$ for some real number A and some rational number k .

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3. Determine the x -values for which the function f below is continuous.

$$f(x) = \begin{cases} x^{\frac{2}{3}} & \text{if } x \leq 1 \\ 2x^{-1} & \text{if } x > 1 \end{cases}$$

4. Use the power rule, sum rule, and constant multiple rule to calculate the derivative of $f(x) = (3x + 1)\sqrt{x}$. (Note: you may have to rewrite the expression before you can apply the differentiation rules.)