

MATH 231
Quiz 1

Name _____
September 4, 2001

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

1. (a) (3 points) Suppose a and b are real numbers with $a < b$. Express $(a, b]$ in (a) set notation, (b) in words, and (c) on a real number line.

- (b) (2 points) Assuming a is positive and b is negative, write $|ab - 1|$ without absolute value bars.

2. (a) (2 points) Solve $x^3 - 9x = 0$.

- (b) (3 points) Find the solution set of $\frac{x^2 - 1}{x^2 - 4} = 0$.

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3. (a) (2 points) Express the following sentence as an inequality involving an absolute value:
"The distance between a and -3 is greater than or equal to two."

(b) (3 points) Find the solution set of $|x^2 - 1| \geq 3$ and write your answer in (a) "inequality" notation, (b) in interval notation, and (c) on a real number line.

4. (a) (2 points) Let A and B be statements. Use truth tables to determine if the statement " $A \Rightarrow B$ " is logically equivalent to the statement " $B \Rightarrow A$ "

(b) (1 point) Express the *negation* of the statement "Some cars do not have four-wheel drive." (Write a *useful* negation, that is, do not simply write "It is not true that")

(c) (2 points) Write (a) the converse and (b) the contrapositive of the statement "If it rains tomorrow then we'll rent a movie."