Quiz 1 Calc 1 9/4/2002

Each problem is worth 5 points. Show complete justification for full credit.

1. [Version with context] A river is 24 inches short of overflowing a dam, and rising 4 inches every day. Express the amount by which the river is below the dam as a function of the number of days which pass.

[Sterilized version, safe for inclusion in mindless calculus textbooks] Find an equation for the line through the points (0,24) and (3,12).

$m = \frac{24-12}{0-3} = \frac{12}{-3} = -4$

y-intercept = 24

$y = mx + b$

$y = -4x + 24$

Good

2. [Version with context] A very simple model for the spread of a disease new to an area is the equation $f(x)=Ca^x$, where x is the number of years after first detection. If there were 7 cases of West Nile Virus reported in the U.S. in 2001 and 21 cases reported in 2002, find the values of the constants C and a to represent the spread of this virus in years after 2001.

[Sterilized version, safe for inclusion in mindless calculus books as long as you use bug spray] Find a function of the form $f(x)=Ca^x$ which passes through the points (0,7) and (1,21).

$y = Ca^x$

$y = 7a^x$

$y = 7 \cdot 3^x$

y-int.

Excellent

$21 = 7a^1$

Plug in points

$3 = a$