Quiz 1 Calculus 1 1/18/2006

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. The manager of a furniture factory finds that it costs \$2200 to manufacture 100 chairs in one day and \$4200 to produce 200 chairs in one day. Express the cost as a function of the number of chairs produced, assuming that it is linear.[1]

(100, \$2200) (200, \$4200) slope $= \frac{y_2 - y_1}{x_2 - x_1} = \frac{\$4200 - \$2200}{200 - 100} = \frac{\$2000}{100} = 20$

$2200 = 20(100) + b$

$200 = b$

Does it work for the other one?

$4200 = 200(20) + 200$

$4200 = 4000 + 200$

$4200 = 4200$ ✓

yup, yup!

$f(x) = 20x + 200$,

where x = # of chairs produced.

Excellent!

2. Suppose that exposure to a certain chemical increases the likelihood of developing a particular form of cancer, so that if a person is exposed to 1 gram of the chemical they have a 5% chance of developing the cancer, but if they're exposed to 2 grams of the chemical they have an 8% chance of developing the cancer. If the relationship is linear, express the probability of developing the cancer as a function of the amount (in grams) of the chemical a person is exposed to.

5

x	f(x)
1g	5%
2g	8%

$m = 3$

$f(x) - 5 = 3(x - 1)$

$f(x) = 3x + 2$

Great

$f(x)$ = % chance

x = chemical in grams