**Name**_____

**Student I.D.**_____

## Math 2250–1
## Quiz 1
## August 26, 2011

1) Write down an initial value problem for the function N(t), as described below. Do not attempt to find the actual solution function.

In a city with a population of 10 thousand people the time rate of change of the number $N$ of those persons infected with a certain contagious disease is proportional to the product of the number who have the disease and the number who do not. At time $t = 0$ days there are 2 thousand infected people.

(4 points)

2) Find the position function $x(t)$ of a moving particle with the acceleration $a(t) = 8 \cdot \sin(2 \cdot t) \; \dfrac{meters}{sec^2}$,

given that its initial position is $x(0) = 8 \; meters$ and its initial velocity is $v(0) = -4 \; \dfrac{meters}{sec}$ .

(6 points)