Mathematics 122 Quiz 5 Name: Key

Let $P(t)$ be the population of a town t years after 2000. If the population of the town is 5,000 in 2000, then

(1) Give a formula for $P(t)$ if the population grows by 250 people a year.

$P(t) =$ $5000+250t$

1 pt You start with 5000 people and add 250 each year.
So $P(t) = 5000+250t$

(2) Give a formula for $P(t)$ if the population grows by 5% a year.

$P(t) =$ $5000(1.05)^t$

2 pts $P(t) = P_0(1+r)^t$
$= 5000(1+.05)^t$

2 pts (3) Use your formula for $P(t)$ in question (2) to find the population of the town in 2100 (that is $t = 100$).

$P(100) =$ $657,506.2$

$P(100) = 5000(1.05)^{100}$
$= 657,506.289$ to the nearest person this is