Mathematics 122 Quiz 7 Name: Key

(1) If \$1,000 is invested at 6% compounded continuously, then what is it worth in 15 years? \$2,459.60

1 pt $1000e^{(.06)15}$

$= 1000e^{\wedge}(.06*15)$

(2) If you wish to have 50,000 in 20 years, how much should you invest now at 5% interest

(a) If the interest is compounded annually. \$18,844.47

2 pts $P(t) = P_0(1.05)^t$ and we want to find P_0 so that

$P_0(1.05)^{20} = 50{,}000$

$P_0 = \frac{50{,}000}{(1.05)^{20}} = 18{,}844.47$

(b) If the interest is compounded continuously 18,393.97

2 pts $P(t) = P_0 e^{.05t}$ and we want to find P_0 so that

$P_0 e^{(.05)20} = 50{,}000$

$P_0 = \frac{50{,}000}{e^{.05(20)}} = 18{,}393.97$