Math 124, 4.1-4.2: Exponential Functions and Applications

Evaluate each exponential expression. Round your answers to two decimal places.

1.) $5(3^6)$

2.) $42.8(e^{-2.35})$

3.) $e^{0.13*5.91}$

4.) $\sqrt[5]{982}$

Exponential growth and decay:

5.) The amount of money in an account after t years is given by $A(t) = 5000(1.025)^t$. Find the amount in the account after 8 years.

6.) Atmospheric pressure in pounds per square inch is given by $P(x) = 14.70e^{-0.0364x}$, where x is the elevation in thousands of feet. Find the atmospheric pressure in Beckley, WV, if the elevation is 2500 feet above sea level.

7.) The population of a city was 16,300 in 2000 and 23,500 in 2010. Find an exponential function $\boxed{f(t) = y_0 b^t}$ for the population of the city with $t = 0$ in 2000.

8.) The half-life of cesium-137 is 30 years. This means that if a sample initially contains 100 mg of cesium-137, then after 30 years 50 mg will remain. Find an exponential function $\boxed{f(t) = y_0 b^t}$ for the amount remaining after t years.