

1. [11 points] On April 22, 1994, the museum where Ross worked received a prehistoric cave painting, and a team of scientists tried to determine its age. The painting contains Carbon-14, but only 15% of the original amount of Carbon-14 was left. The team knew that Carbon-14 decays at a *non-continuous* rate of 1.2% each century (100 years). Let $G(c)$ be the amount of Carbon-14, in grams, left in the painting c centuries after April 22, 1994. (Note that negative values of c correspond to dates prior to April 22, 1994.)

a. [4 points] If a is the amount of Carbon-14, in grams, the painting contained on April 22, 1994, write a formula for the function $G(c)$. (Your answer should involve a .)

b. [3 points] What is the continuous decay rate of the function $G(c)$? Give your answer in **exact** form.

c. [4 points] How many centuries before April 22, 1994 was the painting created? Give your answer in **exact** form or estimate it accurately to three decimal places.

The painting was created _____ centuries before April 22, 1994.