10. [9 points] Suppose data is collected at a U-M basketball game held at Crisler Center. Let $E(t)$ be the total amount of electricity, in megawatt-hours (MWh), that has been used by Crisler Center during the first t minutes of the basketball game, which starts at exactly 7:00 pm. Assume that E is invertible and that both E and E^{-1} are differentiable.

a. [3 points] Suppose b and c are positive constants. Use a complete sentence to give a practical interpretation of the equation

$$E(30+b) = E(30) + c$$

in the context of this problem. Your sentence should involve the constants b and c but not "E". Be sure to include units.

b. [3 points] Fill in the two answer blanks below to write a single mathematical equality involving the derivative of either E or E^{-1} which supports the following claim:

"During the basketball game, Crisler Center uses about 1.8 MWh of electricity during the first 3 seconds after 7:45 pm."

Answer: _____ = _____

c. [3 points] Which of the sentences below best expresses the meaning of the equation

$$E^{-1}(20) = 1.5E^{-1}(12)$$

in the context of this problem? (Circle the one best choice.)

A. Crisler Center uses 50% more electricity during the first 20 minutes after the game starts than during the first 12 minutes after the game starts.

B. It takes half as long for Crisler Center to use the first 12 MWh of electricity during the game than for it to use the next 8 MWh.

C. Crisler Center uses 50% as much electricity during the first 20 minutes after the game starts than during the first 12 minutes after the game starts.

D. It takes 50% longer for Crisler Center to have used a total of 20 MWh of electricity during the game than for it to use the first 12 MWh.

E. Crisler Center uses twice as much electricity during the first 20 minutes after the game starts than during the next 12 minutes.

F. It takes 50% less time for Crisler Center to have used a total of 12 MWh of electricity during the game than for it to use the first 20 MWh.