2. [6 points] For each of the following statements, circle TRUE if the statement is always true and circle FALSE otherwise. Any ambiguous answers will be marked as incorrect.

a. [2 points] Suppose $A(t)$ and $B(t)$ are both everywhere differentiable functions which satisfy the equation $A^2 = e^B$ for all real numbers t. If, additionally, $\ln(2A(0)) = B(0)$, then $A'(0) = B'(0)$.

True False

b. [2 points] If $f(x)$ is an everywhere continuous function and $\int_1^b f(t-b)dt = c$ for some real numbers b and c, then $\int_0^{1-b} 5f(t)dt = -5c$.

True False

c. [2 points] If $r(y)$ is a twice differentiable function whose first derivative is continuous, decreasing, and negative for all real numbers y, then $r(y)$ is concave up.

True False