7. [10 points] Percy brought Sally to the farm one day to pick strawberries. When they first began picking, Sally was picking strawberries at a rate of 357 strawberries per hour, and she was picking strawberries at a rate of 332 strawberries per hour at the end of the second hour.

a. [4 points] Find a formula for an exponential function $R(t)$ that could model the rate at which Sally was picking strawberries t hours after they began. Give your answer in **exact** form.

$R(t) = \underline{\quad 357\left(\sqrt{\frac{332}{357}}\right)^t \quad}$

Solution: Our function will be of the form $R(t) = 357b^t$ since $R(0) = 357$. Using $R(2) = 332$, we see $332 = 357b^2$. So $b = (\frac{332}{357})^{\frac{1}{2}}$.

b. [4 points] Find a formula for a linear function $L(t)$ that could model the rate at which Sally was picking strawberries t hours after they began. Give your answer in **exact** form.

$L(t) = \underline{\quad -\frac{25}{2}t + 357 \quad}$

Solution: The slope of $L(t)$ is $(332 - 357)/2 = -25/2$. The vertical intercept is 357.

c. [2 points] Now assume $S(t)$ was the actual rate at which Sally was picking strawberries t hours after they began. The rate at which Percy was picking strawberries t hours after they began is given by the function $P(t) = S(t + 2)$. Which of the following is a correct practical interpretation of $P(t) = S(t + 2)$ in this context? Circle your answer.

(a) The rate at which Percy picks strawberries is equal to the rate at which Sally was picking them two hours earlier.

(b) Percy picks strawberries for two hours more that Sally.

(c) The rate at which Percy picks strawberries is equal to the rate at which Sally will be picking them two hours later.

(d) Each hour, Percy picks two more strawberries than Sally.