

4. [10 points] Your family farm has a small herd of dairy cows. You decide to track the daily milk production levels of your favorite cow, Bessie, over the course of several months. Below is your table of measurements from every two months of Bessie's milk production level $p(t)$ in liters per day:

day t	0	60	120	180	240	300	360
liters per day $p(t)$	18	24	18	6	0	6	18

- a. [4 points] The function modeling Bessie's daily milk production $p(t)$ is sinusoidal. What is an equation for this function?
- b. [3 points] Suppose you use a right-hand Riemann sum to approximate the total milk produced by Bessie between day 60 and day 240. Is this an overestimate, an underestimate, or can it not be determined? Explain your reasoning.
- c. [3 points] How many measurements would you need to take between day 60 and day 240 to be sure your right-hand Riemann sum approximation is no more than 10 liters off from the exact amount of milk Bessie produces?