

5. [13 points] Jordan owns a 24-hour coffee shop. The coffee brewing rate (or CBR) at Jordan's coffee shop varies throughout the day. The CBR is highest at 6 AM, when coffee is brewed at a rate of 50 pounds of coffee per hour. It is lowest at 6 PM, when coffee is brewed at a rate of only 10 pounds of coffee per hour. Suppose that t hours after noon, the CBR, in pounds of coffee per hour, of Jordan's coffee shop can be modeled by a sinusoidal function $C(t)$ with period 24 hours.
- a. [4 points] On the axes provided below, sketch a well-labeled graph of $C(t)$ for $0 \leq t \leq 24$.



- b. [4 points] Find a formula for $C(t)$.

Answer: $C(t) =$ _____

- c. [5 points] For how many hours each day is the CBR of Jordan's shop at least 40 pounds of coffee per hour? *Remember to show your work.*

Answer: _____