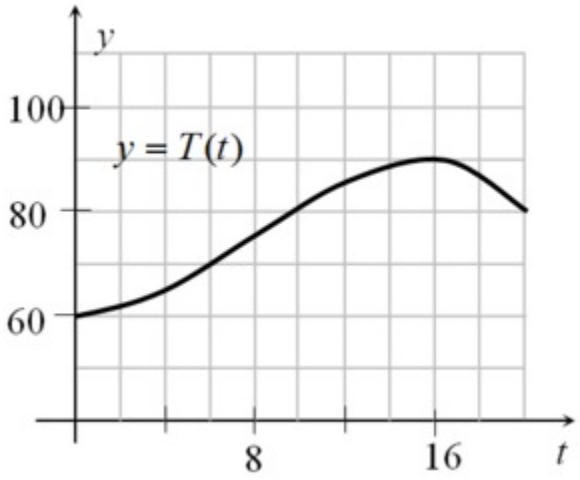
Warming and Cooling

Task

The figure shows the graph of T, the temperature (in degrees Fahrenheit) over one particular 20-hour period in Santa Elena as a function of time t.



a. Estimate $T(14)$.

b. If $t = 0$ corresponds to midnight, interpret what we mean by $T(14)$ in words.

c. Estimate the highest temperature during this period from the graph.

d. When was the temperature decreasing?

e. If Anya wants to go for a two-hour hike and return before the temperature gets over 80 degrees, when should she leave?

Commentary

This task is meant to be a straight-forward assessment task of graph reading and interpreting skills. This task helps reinforce the idea that when a variable represents time, $t = 0$ is chosen as an arbitrary point in time and positive times are interpreted as times that happen after that.

Solution

a. $T(14)$ is a little less than 90 degrees Fahrenheit; maybe 88 or 89 degrees.

b. The temperature was almost 90 degrees at 2: 00 in the afternoon.

c. The highest temperature was about 90 degrees.

d. The temperature was decreasing between 4: 00 p.m. and 8: 00 p.m. It might have continued to decrease after that, but there is no information about the temperature after 8: 00 p.m.

e. The temperature reaches 80 degrees just before 10: 00 a.m. If Anya wants to go for a two-hour hike and return before the temperature gets over 80 degrees, then she should start her hike before 8: 00 a.m.