

The graph on the last page of this project depicts power generation and power consumption at an elementary school in Boulder. The vaguely bell-shaped curve (the green curve on the color graph), call it $g(t)$, represents power **generated** from solar panels installed at the school. The relatively level, jagged curve (the red curve on the color graph), call it $c(t)$, represents power **consumption** at the school.

The vertical axis is the power axis. The range is 0-10 kilowatts (kW). The horizontal axis is the time axis. The domain is from 12 AM Monday, March 18 until 12 AM Tuesday, March 19, 2013. Each of the ticks on the time axis represents 1/2 hour. (The bolder ticks are spaced 3 hours apart.)

To complete this project, you'll need to know that power times time equals energy (assuming power is supplied at a constant rate over the time interval in question).

1. Consider the bell-shaped (green) curve $g(t)$. What quantity does the area under this curve, between two points $t = a$ and $t = b$, represent? What are the units for this quantity?

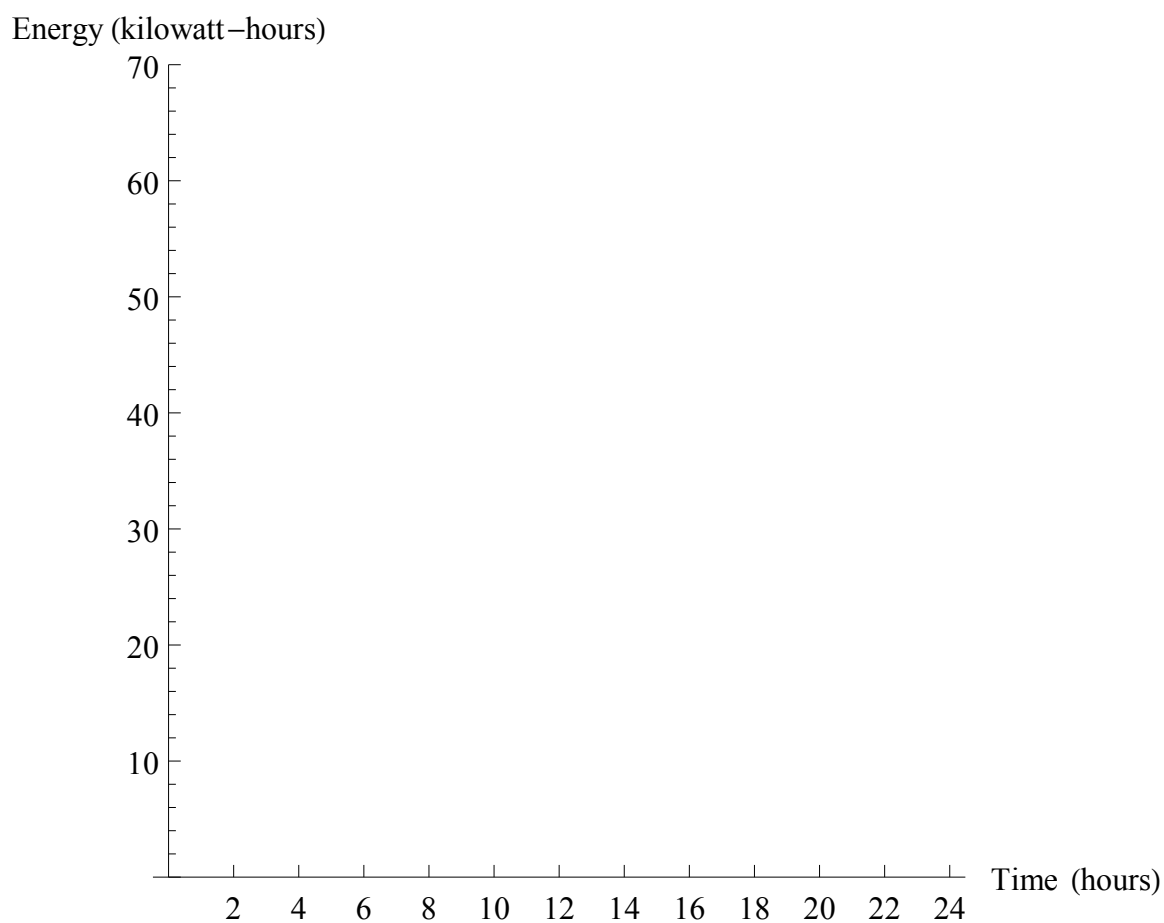
2. Consider the relatively flat (red) curve $c(t)$. What quantity does the area under this curve, between two points $t = a$ and $t = b$, represent? What are the units for this quantity?

3. On the graph, draw right endpoint Riemann sums, of baselength $\Delta t = 2$ hour, representing approximations to:
 - (a) The cumulative energy, call it $G(T)$, *generated* between $t = 0$ and $t = T$ (where $t = 0$ is 12 AM Monday, March 18, 2013);
 - (b) The cumulative energy, call it $C(T)$, *consumed* between $t = 0$ and $t = T$.

4. Using the Riemann sums you drew for the previous exercise, fill out the table, below, of (approximate) values of $g(t)$, $G(T)$, $c(t)$ and $C(T)$.

T	2	4	6	8	10	12	14	16	18	20	22	24
$g(T)$												
$G(T)$												
$c(T)$												
$C(T)$												

5. On the axes below, sketch the graphs of $G(T)$ and $C(T)$.



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