1. Recall that the average value of a function $f$ over the interval $[a, b]$ is defined as 
$$f_{\text{ave}}[a, b] := \frac{1}{b-a} \int_{a}^{b} f(x) \, dx.$$ 
Use the above formula to show that, for any number $c$ in the interval $[a, b]$, we have 
$$f_{\text{ave}}[a, b] = \frac{c-a}{b-a} f_{\text{ave}}[a, c] + \frac{b-c}{b-a} f_{\text{ave}}[c, b].$$

2. If on a certain day the average temperature from noon until 4 pm was 75°, and the average temperature from 4 pm until 6 pm was 60°, what was the average temperature from noon until 6 pm?

Each problem is worth 5 points.