

# QUIZ 5

**Time: 15min**

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1. Recall that the average value of a function  $f$  over the interval  $[a, b]$  is defined as

$$f_{ave}[a, b] := \frac{1}{b-a} \int_a^b f(x) dx.$$

Use the above formula to show that, for any number  $c$  in the interval  $[a, b]$ , we have

$$f_{ave}[a, b] = \frac{c-a}{b-a} f_{ave}[a, c] + \frac{b-c}{b-a} f_{ave}[c, b].$$

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

*Each problem is worth 5 points.*