Section 6.4

5. a) Find the average value of f on the given interval.

$f(x) = (x-3)^2 \; ; \; [2,5]$

Average value $= \frac{1}{5-2}\int_2^5 (x-3)^2\,dx$

$= \frac{1}{3}\cdot\frac{1}{3}(x-3)^3\Big|_2^5$

$= \frac{1}{9}\left[(5-3)^3 - (2-3)^3\right] = \frac{1}{9}\left(8-(-1)\right) = 1.$

b.) Find c such that $f_{ave} = f(c)$

$f_{ave} = 1 = f(c) = (c-3)^2$

$\Rightarrow \pm 1 = c-3 \Rightarrow c = 4.$ or $c = 2$

c) sketch the graph of f & a rectangle whose area is the same as the area under the graph of f.