§5.5 Avg Value

$$y_{AVG} = \frac{1}{b-a}\int_a^b f(x)\,dx$$

f is cnts for this to work.

& if it is then you might be asked to find y_{AVG} AND find x, where $f(x) = y_{AVG}$.

(a) Net Displacement t^2-5t+6

$$\int_0^4 (t^2-5t+6$$

(b) Total Displacement

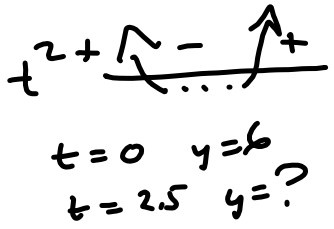
$$\int_0^4 |t^2-5t+6|\,dt$$

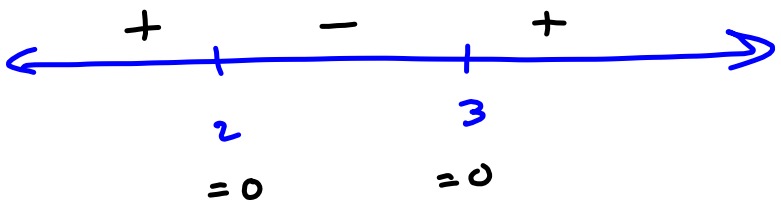
We analyze sign pattern for t^2-5t+6:

$t^2-5t+6=0$

$(t-3)(t-2)=0$

$t=2,3$





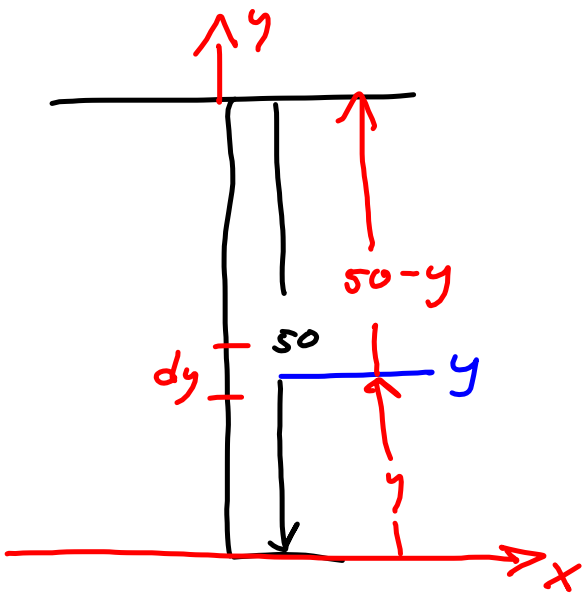
$$\int_0^2 (t^2-5t+6)\,dt - \int_2^3 (t^2-5t+6)\,dt + \int_3^4 (t^2-5t+6)\,dt$$

$$|t^2-5t+6| = \begin{cases} t^2-5t+6 & \text{if } t\le 2 \text{ OR } t\ge 3 \\ -(t^2-5t+6) & \text{if } 2<t<3 \end{cases}$$

§5.4 #13

$\frac{1}{2}$ lb/ft

$\int_0^{50}$ dy



Force = $(.5 \frac{lb}{ft})(dy\ ft)$

$= .5\,dy$ lbs

Distance moved:

$50-y$ ft

$Work = \int_0^{50} (.5)(50-y)\,dy$

Work = Force times distance