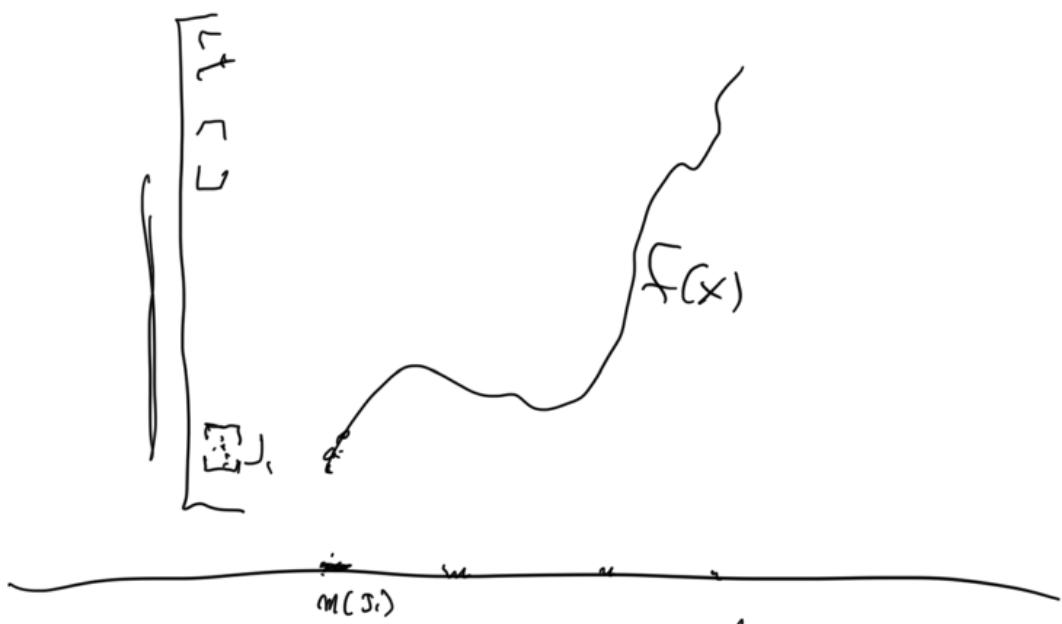


From: Kevin Cahill kevinecahill@gmail.com  
 Subject: class notes 0  
 Date: September 22, 2020 at 11:11 PM  
 To: Kevin Cahill kevinecahill@gmail.com



$$\int_a^b f(x) dx = \sum_k f(x_k) m(J_k)$$

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$$m(S) + m(S') = b - a$$

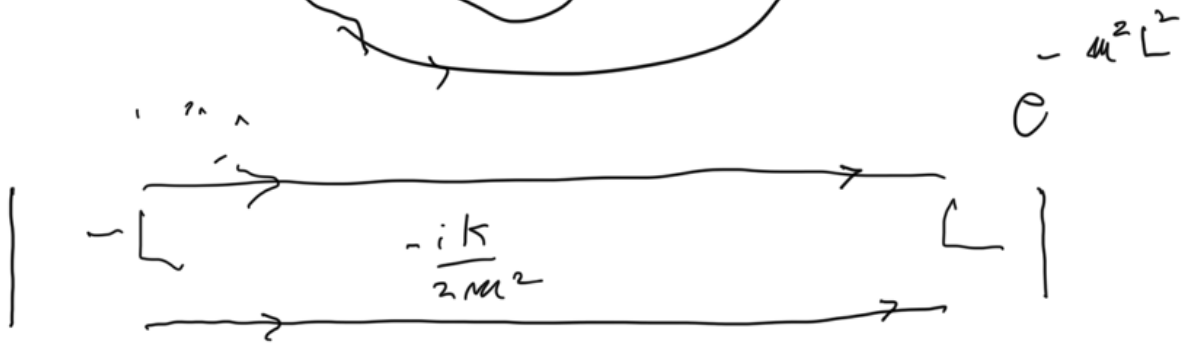
$[n] = n$   
 $[n + \epsilon] = n$  if  $|\epsilon| < 1/2$   
 $[x]$  is the integer closest to  $x$ .

$$[5 + .75] = 6$$

$$[5 - .75] = [4.25] = 4$$

$$\left| e^{\frac{i\pi x}{L}} - 1 \right| = \left[ 1 + \frac{i\pi x}{L} + \left( \frac{i\pi x}{L} \right)^2 \frac{1}{2!} + \dots + (-1) \right]$$

$$\approx \left| \frac{\pi x}{L} \right| \rightarrow 0 \text{ as } L \rightarrow \infty$$



$$f(x) = \text{[bell-shaped curve]} \quad \tilde{f}(k) = \text{[smooth curve]}$$

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$$\delta(x) = \int_{-\infty}^{\infty} e^{ikx} \frac{dk}{2\pi}$$

$f(k) \approx 1$   
 $x=0$

if  $f(x)$  is real  $\Leftrightarrow f(x) = f^*(x)$ .

$$\int f(x) \delta(x) dx = f(0).$$

$$g(x_0) = 0$$

$$g(x) \neq 0 \text{ if } x \neq x_0$$

$$g'(x_0) \neq 0$$