

MATH 142 (SUMMER '21, SESH A2)

ANURAG SAHAY

OFF HRS: M, T, F 4-5PM;  
BY APPOINTMENT

LECTURES:

5:45 PM - 7:50 PM (ET)

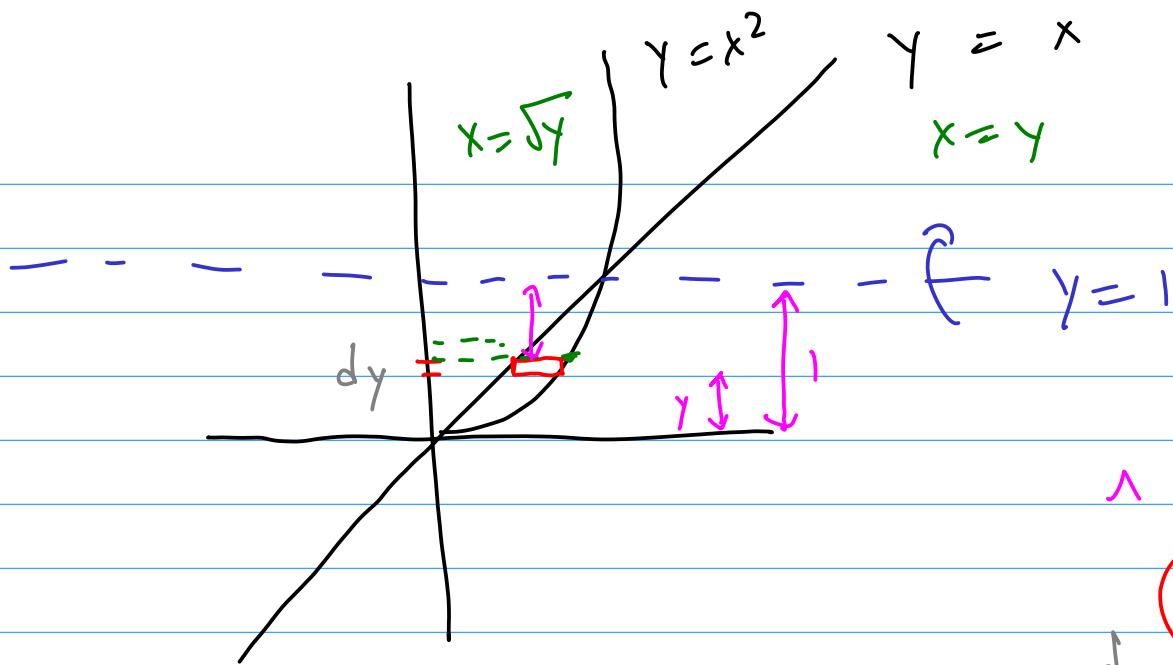
M, T, W, R

Zoom ID:

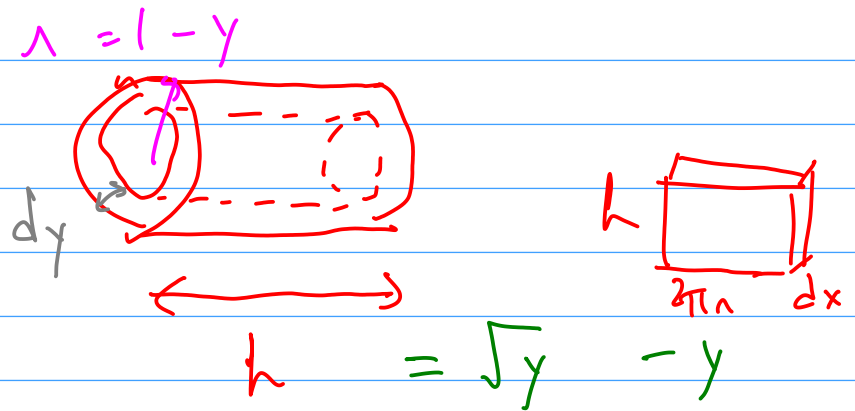
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COURSE PAGE : [bit.ly/sahay142](https://bit.ly/sahay142)



SHELL



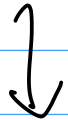
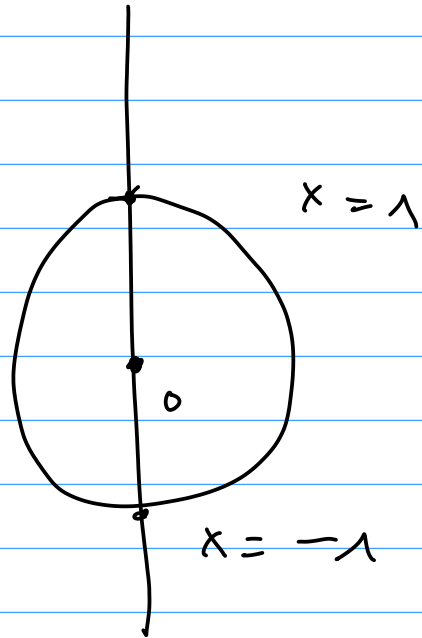
$$\begin{aligned}
 V &= \text{CIRC} \times \text{HEIGHT} \times \text{THICKNESS} \\
 &= \int 2\pi (1-y) (\sqrt{y} - y) dy
 \end{aligned}$$

$$\text{WORK FOR A PIECE} = (F)(x)$$

$$\text{WORK FOR A PIECE AT } x = 9890\pi x [4 - (2-x)^2] dx$$

$$\text{TOTAL WORK TO EMPTY} = \int_0^4 9800\pi x [4 - (2-x)^2] dx$$

$$\text{WORK TO EMPTY HALF} = \int_0^2 9800\pi x [4 - (2-x)^2] dx$$



BREAK TILL

6:55 PM ET

$$I = \int e^u \sin u \, du = -e^u \cos u + \int e^u \cos u \, du$$

$$U = e^u \Rightarrow dU = e^u du \Rightarrow -e^u \cos u + \int e^u \cos u \, du$$

$$\frac{dV}{du} = \sin u \Rightarrow V = -\cos u \quad U = e^u \Rightarrow dU = e^u du$$

$$dV = \cos u \, du \Rightarrow V = \sin u$$

$$= -e^u \cos u + \left( e^u \sin u - \int e^u \sin u \, du \right)$$

$$I = -e^u \cos u + e^u \sin u - I \Rightarrow I = \frac{e^u}{2} [\sin u - \cos u] + C$$