

Taker Name:

key

GTID: 90

Section:

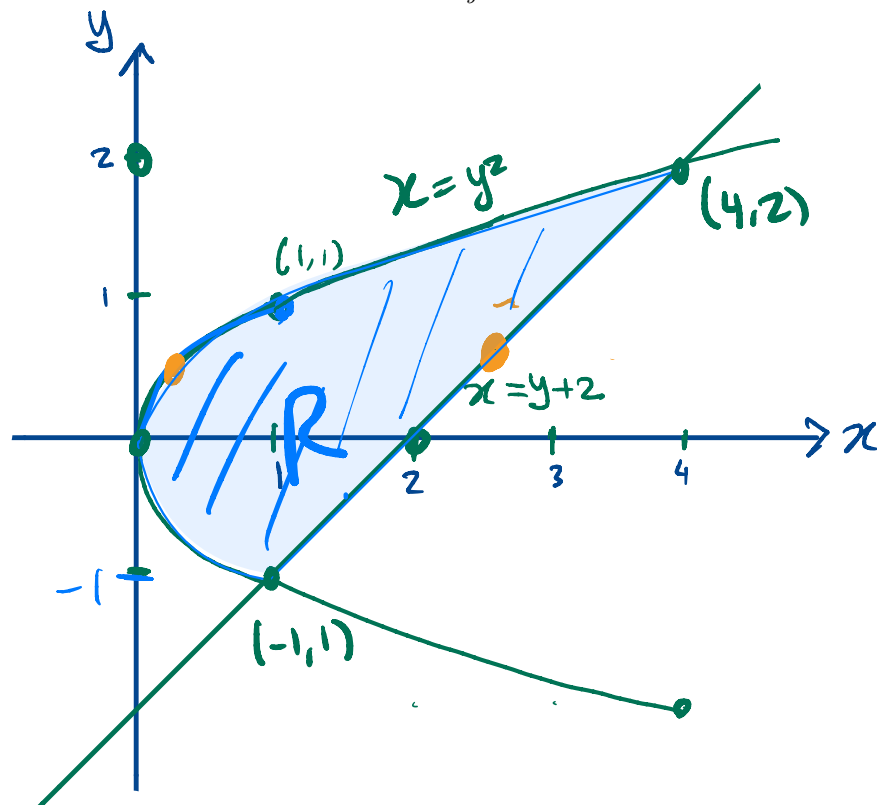
Grader #1:

GTID: 90

## §15.3: Area and Average Value

Sketch the region of integration  $R$ , labeling each bounding curve with its equation and giving the coordinates of the points where the curves intersect. Then find the area of the region  $R$ .

$$\int_{-1}^2 \int_{y^2}^{y+2} 1 \, dx \, dy$$



A	
J	
N	
G2:	
A	
J	
N	
G3:	
A	
J	
N	

$$\text{Area} = \int_{-1}^2 \int_{y^2}^{y+2} 1 \, dx \, dy = \int_{-1}^2 x \Big|_{y^2}^{y+2} dy$$

$$= \int_{-1}^2 (y+2) - y^2 \, dy = \left. \frac{1}{2}y^2 + 2y - \frac{1}{3}y^3 \right|_{-1}^2$$

$$= \left( 2 + 4 - \frac{8}{3} \right) - \left( \frac{1}{2} - 2 + \frac{1}{3} \right) = 8 - 3 - \frac{1}{2} = 4.5 = \boxed{9/2}$$