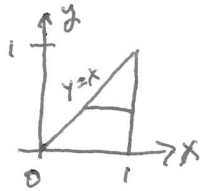
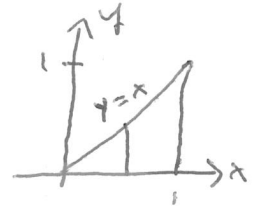


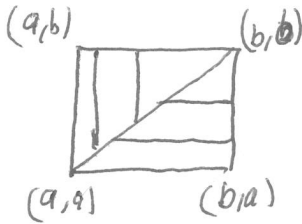
① The original region



The new integral

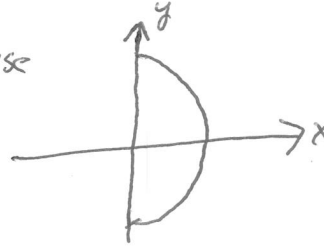


②

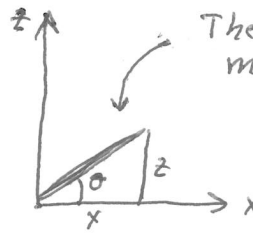


③

base



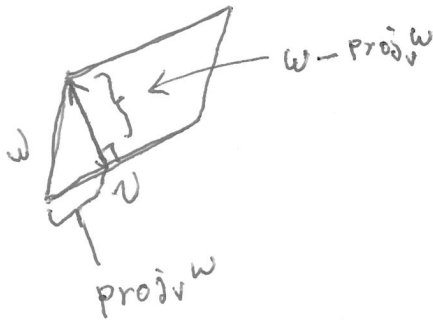
top



The top is a plane that makes the angle θ with the y -axis in the xy plane. the z -coordinate of a point on the top depends only on the x -coordinate

$$z = x \tan \theta$$

6



Notice $\text{proj}_v w + (w - \text{proj}_v w) = w$

and v is \perp to $w - \text{proj}_v w = w - \frac{v \cdot w}{v \cdot v} v$

because $v \cdot (w - \frac{v \cdot w}{v \cdot v} v)$ is obviously 0