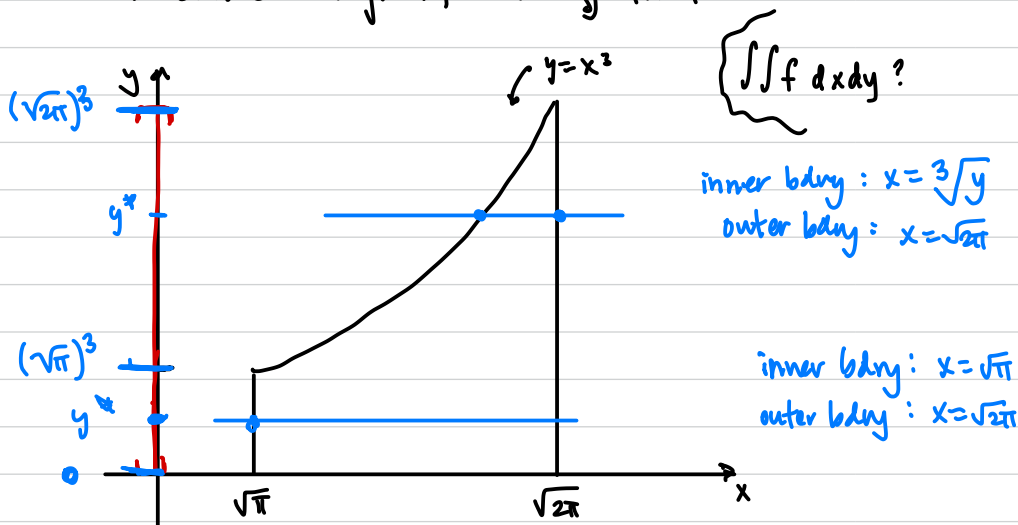


Now, consider same integral, with $\int^x$ first.



- project onto y -axis
- choose generic pt y^*
- draw straight lines.

Here: two styles of slices:

style 1: area slice = $\int_{x=\sqrt{\pi}}^{x=\sqrt{2\pi}} f(x, y^*) \, dx$

style 2: area slice = $\int_{x=\sqrt[3]{y}}^{x=\sqrt{2\pi}} f(x, y^*) \, dx$

Thus:

$$\iint_D f(x, y) dx dy = \int_0^{(\sqrt{\pi})^3} \int_{\sqrt{\pi}}^{\sqrt{2\pi}} f(x, y) dx dy + \int_{(\sqrt{\pi})^3}^{(\sqrt{2\pi})^3} \int_{\sqrt[3]{y}}^{\sqrt{2\pi}} f(x, y) dx dy$$

Fubini's
Thms

$$= \int_{\sqrt{\pi}}^{\sqrt{2\pi}} \int_0^{x^3} f(x, y) dy dx$$