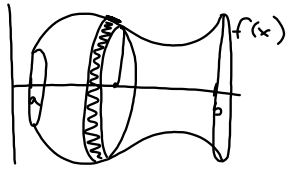


Bonus Lesson 2! - Surface Area



$2\pi r h$

$$2\pi \int_a^b f(x) \sqrt{1 + (f'(x))^2} dx$$

May 19-12:48 PM

Ex. Find the SA on $[0, 2]$ $f(x) = \frac{1}{3}x^3$

$f(x) = \frac{1}{3}x^3$
 $f'(x) = x^2$
 $(f'(x))^2 = x^4$

$2\pi \int_0^2 \frac{1}{3}x^3 \sqrt{1+x^4} dx$

$\odot x$ -axis
 $u = 1+x^4$
 $du = 4x^3 dx$

$$\frac{2\pi}{4} \cdot \frac{1}{3} \int \sqrt{u} du$$

$$\frac{\pi}{6} \cdot \frac{2}{3} (x^4 + 1)^{3/2} \Big|_0^2$$

$$\frac{\pi}{9} (17)^{3/2} - \frac{\pi}{9}$$

May 19-1:17 PM