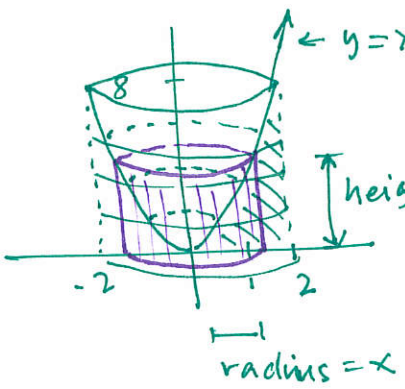
NAME Key AUGUST 9, 2018

Quiz #22

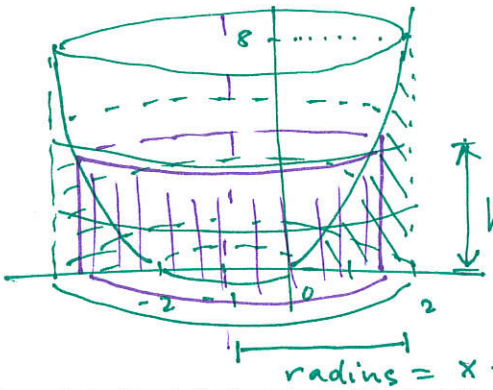
1. Formulate the definite integral to find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $y = 0$, and $x = 2$ about the $y - axis$ using cylindrical shells. *You don't have to solve the integral but I want to sketch the resulting solid of revolution.* [3]



$$V = \int_0^2 2\pi x f(x)\,dx = \int_0^2 2\pi x^4\,dx$$

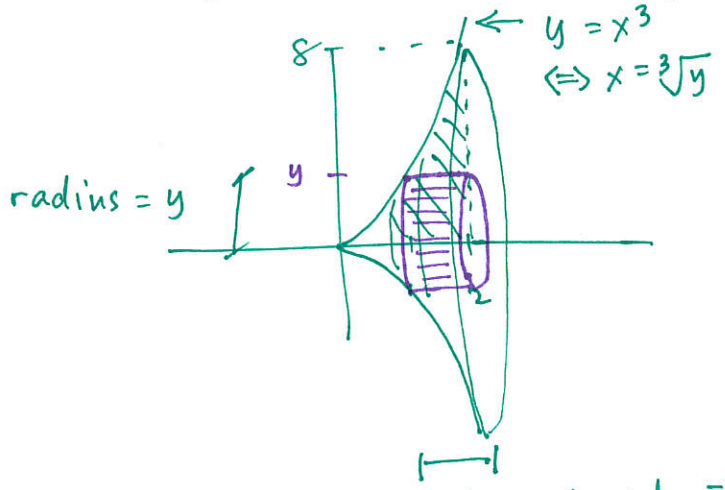
2. Formulate the definite integral to find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $y = 0$, and $x = 2$ about the line $x = -1$ using cylindrical shells. *You don't have to solve the integral but I want to sketch the resulting solid of revolution.* [3]

x = -1 (axis of revolution)



$$V = \int_0^2 2\pi (x+1)(x^3)\,dx$$

3. Formulate the definite integral to find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $y = 0$, and $x = 2$ about the $x - axis$ using cylindrical shells. *You don't have to solve the integral but I want to sketch the resulting solid of revolution.* [4]



$$V = \int_0^8 2\pi y (2 - \sqrt[3]{y})\,dy$$