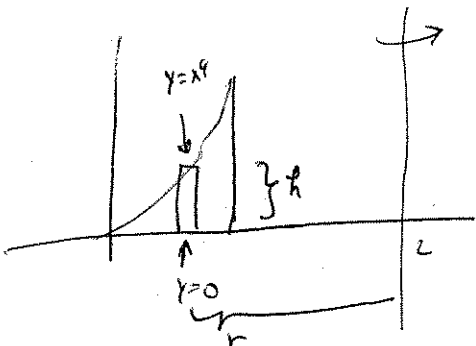


Quiz 6 — September 29, 2010 — Section 9 — 10:10 — 11:00

Circle your answer. Show your work.

The quiz is worth 5 points.

Consider the region in the  $xy$ -plane bounded by  $y = x^4$ ,  $y = 0$ , and  $x = 1$ . Revolve this region about the line  $x = 2$ . Find the volume of the resulting solid.



spin the rectangle. Get a shell of volume  $2\pi r h \epsilon = 2\pi (2-x)(x^4-0) dx$

The volume of the solid is

$$2\pi \int_0^1 (2x^4 - x^5) dx = 2\pi \left( \frac{2x^5}{5} - \frac{x^6}{6} \right) \Big|_0^1 = 2\pi \left( \frac{2}{5} - \frac{1}{6} \right)$$

$$= \frac{\pi}{15} (12 - 5)$$

$$= \boxed{\frac{7\pi}{15}}$$