

Worksheet 14

Fall 2016

MATH 221

Name: _____

Volumes

- (a) Find the volume of the solid obtained by rotating the area bounded by $y = \sqrt{2x}$ and $y = 4x^2$ around the y -axis.
- (b) Find the volume of the solid obtained by rotating the area bounded by $x = (y - 2)^2$ and $y = x$ around the line $y = -1$.
- (c) Find the volume of a torus (donut) obtained by rotating the circle centered at $(R, 0)$ of radius r around the y -axis.
- (d) Find the volume of a wedge cut out of a cylinder of radius r if the angle between the top and bottom of the wedge is $\frac{\pi}{6}$.

Some extra practice

(a) Compute

$$\lim_{x \rightarrow \infty} \log(x^2) - \log(x)$$

(b) Compute

$$\lim_{x \rightarrow \infty} e^{\sqrt[3]{x}} \sqrt[3]{e^x}$$

(c) Integrate

$$\int (7 - x)^{10} dx$$

(d) Compute

$$\int_1^2 \frac{\sin(\ln x)}{x} dx$$

(e) Integrate

$$\int x\sqrt{4-x} dx$$

(f) Integrate

$$\int \sqrt{4 - \sqrt{x}} dx$$

(g) Compute the area of the region bounded between $x = y^2$ and $x = 4$