

Announcements

Test 2 - TODAY

See announcement in Brightspace

Arrive by 6:15 PM

① Come to front, pick up Scantron

② Go to seat, fill out scantron

+ put photo ID on desk

+ calculator

Exam 2 Review

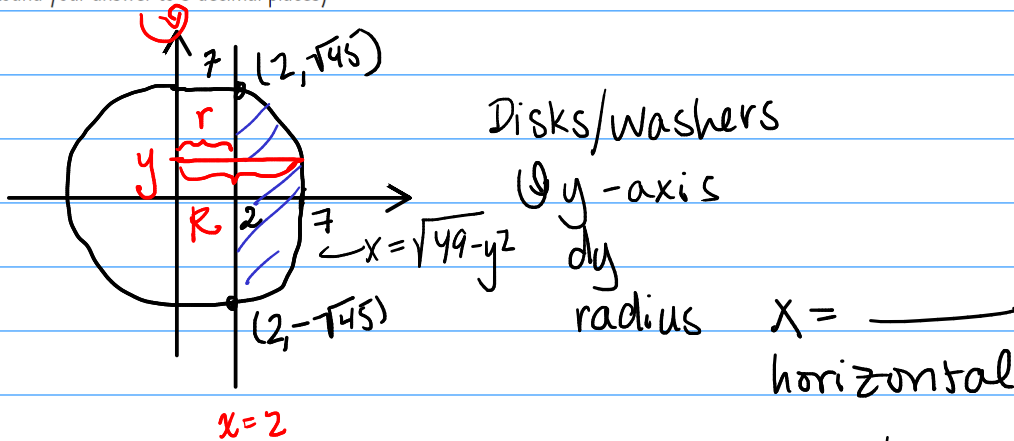
EX2

REV

15.3

Find the volume of the solid generated by revolving the region inside the circle $x^2 + y^2 = 49$ and to the right of the line $x = 2$ about the y -axis.

(Round your answer to 3 decimal places)



$$x^2 + y^2 = 49$$

$$x^2 = 49 - y^2$$

$$x = \sqrt{49 - y^2}$$

pos $\sqrt{\quad}$ b/c right half of \odot

intersection pts

$$\begin{cases} x^2 + y^2 = 49 \\ x = 2 \end{cases}$$

$$2^2 + y^2 = 49$$

$$y^2 = 45$$

$$y = \pm\sqrt{45}$$

$$V = \int_{-\sqrt{45}}^{\sqrt{45}} \pi \left((\sqrt{49 - y^2})^2 - 2^2 \right) dy$$

$$= \int_{-\sqrt{45}}^{\sqrt{45}} \pi (49 - y^2 - 4) dy = \int_{-\sqrt{45}}^{\sqrt{45}} \pi (45 - y^2) dy$$

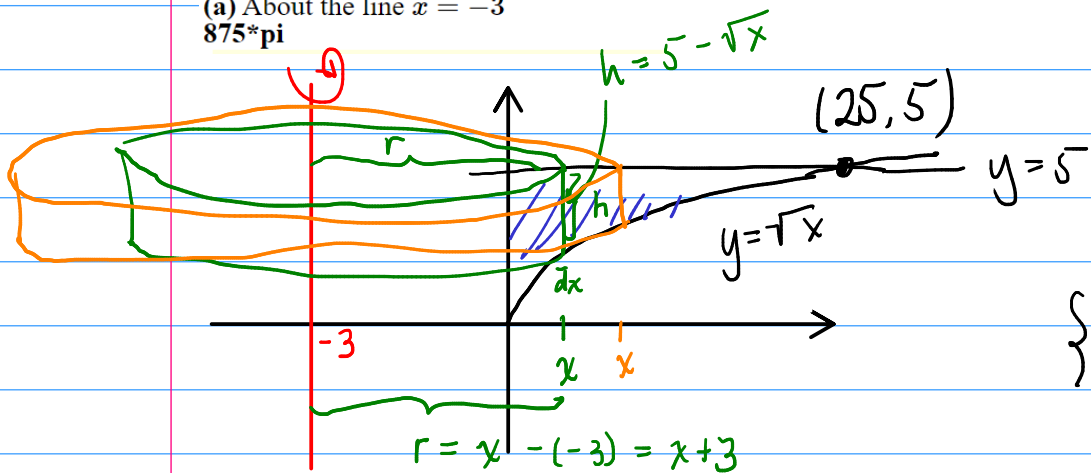
$$\pi \left[45y - \frac{y^3}{3} \right]_{-\sqrt{45}}^{\sqrt{45}} = \text{Plug in limits \& subtract to finish.}$$

HW 18 # 4a

Find the volume of the solid obtained by revolving the region in quadrant I enclosed by the curves $y = \sqrt{x}$ and $y = 5$ about the line indicated for each part.

Use "pi" for π .

(a) About the line $x = -3$
 875π



intersection pts

$$\begin{cases} y = 5 \\ y = \sqrt{x} \end{cases}$$

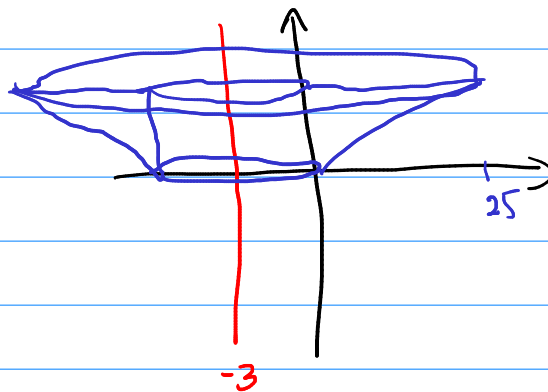
$$5 = \sqrt{x}$$

$$25 = x$$

$\odot x = -3$ (vertical like y-axis)
 shells (vertical heights $\& y =$)
 dx
 $x: 0 \rightarrow 25$

$$V = \int_0^{25} 2\pi \underbrace{(x+3)}_r \underbrace{(5-\sqrt{x})}_h dx$$

$x: 0 \rightarrow 25$



Exam 2 Rev

11.4

Evaluate

$$\int_1^{\infty} \frac{6e^{-2\sqrt{x}}}{3\sqrt{x}} dx,$$

rounding to 4 decimal places.

$$\int \frac{6e^{-2\sqrt{x}}}{3\sqrt{x}} dx = \int \frac{6e^u \cdot (-1)}{3} du = -2 \int e^u du$$

$$= -2e^u + C$$

$$= -2e^{-2\sqrt{x}} + C$$

$$u = -2\sqrt{x}$$

$$u = -2x^{1/2}$$

$$du = -x^{-1/2} dx$$

$$du = -\frac{1}{\sqrt{x}} dx$$

$$-1 du = \frac{1}{\sqrt{x}} dx$$

$$\int_1^{\infty} \frac{6e^{-2\sqrt{x}}}{3\sqrt{x}} dx = \lim_{b \rightarrow \infty} \int_1^b \frac{6e^{-2\sqrt{x}}}{3\sqrt{x}} dx = \lim_{b \rightarrow \infty} -2e^{-2\sqrt{x}} \Big|_1^b$$

Form $e^{-2\sqrt{b}} \rightarrow e^{-2\infty} \rightarrow e^{-\infty} \rightarrow 0$

$$= \lim_{b \rightarrow \infty} -2(e^{-2\sqrt{b}} - e^{-2\sqrt{1}}) = -2(0 - e^{-2}) = -2(-e^{-2}) = 2e^{-2}$$

$$y = e^x$$

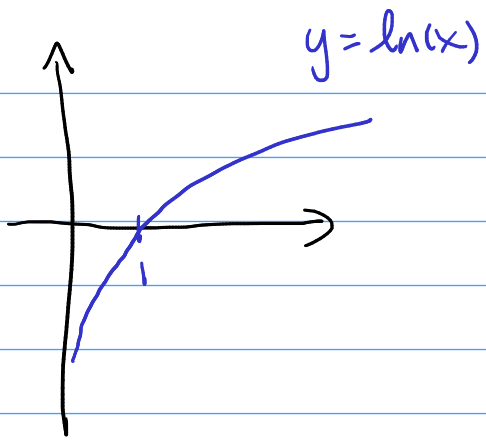


$$\lim_{x \rightarrow \infty} e^x = \infty$$

Form $e^{\infty} \rightarrow \infty$

$$\lim_{x \rightarrow -\infty} e^x = 0$$

Form $e^{-\infty} \rightarrow 0$



$$\lim_{x \rightarrow \infty} \ln(x) = \infty$$

$$\lim_{x \rightarrow 0^+} \ln(x) = -\infty$$