Spring 2012

13. Find the volume of the solid generated by revolving the region bounded by the graphs of

$y = x^2$ and $y = 1$ around the $x-$ axis.

A) $\dfrac{8}{5}\pi$
B) $\dfrac{1}{5}\pi^2$
C) $\dfrac{4}{5}\pi$
D) 2π
E) $\dfrac{14}{15}\pi$
F) $\dfrac{16}{5}\pi$

3. Find the volume obtained by rotating the region between the graph of $y = \frac{1}{2}\sin^2(x^2)$ and the x-axis for $0 \le x \le \sqrt{\pi}$ about the y-axis.

(A) $\frac{\pi}{2}$ (B) $\frac{\pi^2}{4}$ (C) $\frac{5}{4}$ (D) $\frac{3\pi^2}{4}$ (E) $\frac{1}{2}$ (F) $\frac{1}{4}$ (G) $\frac{\pi}{8}$ (H) $\frac{\pi^2}{8}$

2. A pyramid with a square base lies on the x, y-plane, with the vertices of its base at the points $(1, 1), (1, -1), (-1, 1), (-1, -1)$. The height of the pyramid is 2, and the vertex of the pyramid lies directly over the origin of the x, y-plane. What is the volume of the pyramid?

(a) 2   (b) 3   (c) 5/2   (d) 8/3   (e) 11/4   (f) 18/5

Math 104 Rimmer   Name_____
Hand in Hw # 2

Fall 2010

3. Find the volume of the solid obtained by rotating the region bounded by the x-axis, the line $y = 1$, the curve $y = \ln(x)$, and the line $x = 1/2$ about the y-axis.

(A) $\pi(e-2)$ (B) $2\pi\left(\dfrac{e^2}{4} - \dfrac{3}{4}\right)$ (C) $2\pi\left(\dfrac{e^2}{4} + \dfrac{3}{4}\right)$ (D) $\pi\left(\dfrac{1}{2}e^2 - \dfrac{3}{4}\right)$

(E) $\dfrac{\pi}{8}(4e^2 - 3 - 2\ln 2)$ (F) $\pi\left(e - \dfrac{3}{2}\right)$ (G) $\dfrac{e\pi}{2}$ (H) $\pi\left(\dfrac{3}{4} + \dfrac{e^2}{2} - e\right)$

2. Find the volume of the solid obtained by rotating the region bounded by the curves $y = 1/x$ and the x-axis between $x = 1$ and $x = 2$ about the x-axis.

(a) π (b) $\pi/2$ (c) $\pi/3$ (d) $\pi/4$ (e) $2\pi/3$ (f) $3\pi/4$

3. Find the volume of the solid obtained by rotating the region bounded by the curves $y = x$ and $y = x^2$ about the y-axis.

(a) $\pi/2$ (b) $\pi/3$ (c) $\pi/4$ (d) $\pi/5$ (e) $\pi/6$ (f) $\pi/7$

Name_____

Spring 2009

3.   The base of a solid is a semi-circular disk $\{(x, y)\,|\,x^2 + y^2 \le 1,\ x \ge 0\}$. Cross sections perpendicular to the x-axis are squares with their vertices on the semi-circle. Compute the volume of the solid.
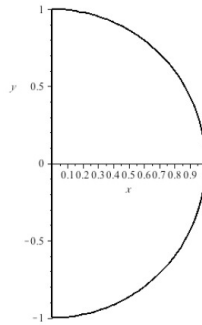
a) $\dfrac{8}{3}$ b) π^2 c) $\dfrac{2\pi}{3}$ d) $\dfrac{\pi^2}{4}$ e) 1   f) 4
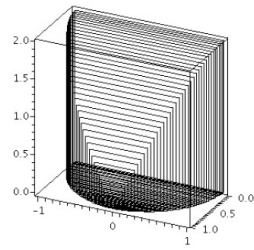
The Base

The Solid

Fall 2008

2. The volume of the solid generated by revolving the region bounded by the curves $x = y^2$ and $y = x - 2$ about the y-axis

a) $\dfrac{20\pi}{3}$ b) $\dfrac{72\pi}{5}$ c) $\dfrac{42\pi}{5}$ d) $\dfrac{13\pi}{2}$ e) $\dfrac{32\pi}{5}$ f) $\dfrac{212\pi}{15}$

Name_____

ANSWERS:

SPRING 2012 # 13: **A**

FALL 2011 # 3: **B**

SPRING 2011 # 2: **D**

FALL 2010 # 3: **D**

SPRING 2010 # 2: **B**

SPRING 2010 # 3: **E**

SPRING 2009 # 3: **A**

FALL 2008 # 2: **B**