Homework 33

The **due date** for this homework is **Tue 7 May 2013 12:00 AM EDT**.

Question 1

Let D be the region bounded by the curve $y = x^3$, the x-axis, the line $x = 0$ and the line $x = 2$. Find the volume of the region obtained by revolving D about the x-axis.

- 2π
- 4π
- None of these
- $\frac{64}{3}\pi$
- $\frac{64}{7}\pi$
- $\frac{128}{7}\pi$

Question 2

Let D be the region from Question 1. What is the volume of the region formed by rotating D about the line $x = 3$?

- 48π
- 24π
- $\frac{56}{5}\pi$
- $\frac{264}{5}\pi$

- $\frac{184}{3}\pi$
- $\frac{216}{5}\pi$

Question 3

Let R be the region between the curve $y = -(x-2)^2 + 1$ and the x-axis. Find the volume of the region obtained by revolving R about the y-axis.

- $\frac{52}{3}\pi$
- $\frac{16}{3}\pi$
- $\frac{4}{5}\pi$
- $8\pi^2$
- $\frac{32}{5}\pi$
- $\frac{16}{3}\pi^2$

Question 4

Find the volume obtained by revolving the region between the curves $y = x^3$ and $y = \sqrt[3]{x}$ in the first quadrant about the x-axis.

- $\frac{26}{35}\pi$
- $\frac{9}{35}\pi$
- $\frac{1}{11}\pi$
- $\frac{32}{35}\pi$

- $\frac{8}{35}\pi$
- $\frac{16}{35}\pi$

Question 5

Let D be the region under the curve $y = \ln\sqrt{x}$ and above the x-axis from $x = 1$ to $x = e$. Find the volume of the region obtained by revolving D about the x-axis.

- $\frac{\pi(e-1)}{2}$
- $\pi(e-2)$
- $\frac{\pi(e-1)}{4}$
- $\pi(e-1)$
- $\frac{\pi(e-2)}{2}$
- $\frac{\pi(e-2)}{4}$

Question 6

Let D be the region bounded by the graph of $y = 1 - x^4$, the x-axis and the y-axis. Which of the following integrals can be used to compute the volume of the region obtained by revolving D around the line $x = 5$?

- $\int_{x=0}^{1} \pi(1-x^4)^2\,dx$
- $\int_{y=1}^{1} 5\pi y\sqrt[3]{y-1}\,dy$

- $\int_{x=0}^{1} 2\pi(5-x)(5-x^4)\,dx$
- $\int_{x=0}^{1} 2\pi x(x^4-5)\,dx$
- $\int_{x=0}^{1} 2\pi(5-x)(1-x^4)\,dx$
- $\int_{x=0}^{1} \pi x^2(1-x^4)\,dx$

☐ In accordance with the Honor Code, I certify that my answers here are my own work.

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