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MAJOR No. 2
(MATH. 102-042 Sections 1 & 2)

Name:
ID:

Prob. 1

Find the exact arc length of the curve $24xy = y^4 + 48$ from $y = 2$ to $y = 4$

Prob. 2

Find the volume of the region bounded by $y = x^2$, $y = 2 - x$ and $x = 0$ revolved about the

- a) x -axis
- b) y -axis
- c) $y = 2$.

Prob. 3

The integral represents the volume of a solid. Sketch the region and axis of revolution that produce the solid.

a) $\int_0^2 \pi(2x - x^2)^2 dx$

b) $\int_0^1 \pi [(\sqrt{y})^2 - y^2] dy$

c) $\int_0^1 2\pi x(x - x^2) dx$

d) $\int_0^2 2\pi(4 - y)(y + y) dy$

Prob. 4

Find the integral

$$\int \frac{dx}{\sqrt{9+x^2}}$$

Prob. 5

Find

$$\int \sqrt{\sin x} \cos^5 x dx$$

Prob. 6

Compute $\int \frac{2x^2-5x+2}{x^3+x} dx$