

Practice Exam 1

Name:.....

Make sure to neatly and clearly show all work and mark your answers.

1. Find

$$\int_0^1 x^3(x^4 + 2)^3 dx$$

2. Find the area bounded by the function $f(x) = 8x$, $g(x) = \frac{8}{x}$, and $h(x) = x^2$.

3. Suppose that R is the region bounded by $f(x) = e^{x^2}$, $y = 0$, $x = 0$ and $x = 1$. Furthermore, let this region be expanded to 3-dimensions by letting the cross sectional pieces be rectangles of height $f(x)$, and depth x . Find the volume of the described object.

4. Let R be the region bounded by $f(x) = x^2$ and $x = 1$. Find the volume of the object obtained by revolving R about the y -axis.

5. Let R be the region bounded by $f(x) = \ln(x^2)$, $y = 0$ and $x = e$. Find the volume of the object obtained by revolving this region about the y -axis.

6. Find the length of the curve of $f(x) = \frac{2}{3}(x + 1)^{\frac{3}{2}}$ on the interval $[0, 3]$.

7. Find the surface area of the object obtained by revolving

$$f(x) = \frac{1}{14}(e^{7x} + e^{-7x})$$

on $[-2, 2]$ around the x -axis.