

MAC2312 Section U03
Suggested problems for Test 2
(Test 2 is Friday March 3rd, in class)

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1. Find the area bounded by the curves $y = x^2$ and $y = 2x$.

2. Let R be the region bounded by the curves $y = x^2$ and $y = \sqrt{x}$. Find the volume obtained by revolving R around the x -axis.

3. Let R be the region bounded by the curves $y = x^2$ and $y = \sqrt{x}$. Find the volume obtained by revolving R around the y -axis.

4. Find the length of the curve $y = x^{3/2}$ between $x = 0$ and $x = 1$.

5. Find the length of the curve $y = x^{2/3}$ between $x = 0$ and $x = 1$.

6. Let C be the portion of the curve $y = x^{1/2}$ between $x = 0$ and $x = 1$. Find the surface area obtained by revolving C around the x -axis.

7. Let C be the portion of the curve $y = x^3$ between $x = 0$ and $x = 1$. Find the surface area obtained by revolving C around the x -axis.

8. Evaluate the integral.

$$\int x^2 e^x dx$$

9. Evaluate the integral.

$$\int_0^{\pi/2} x \cos x \, dx$$

10. Evaluate the integral.

$$\int x^7 \ln x \, dx$$

11. A force of $F(x) = 10 - 2x$ newtons (applied in the positive x direction) moves an object 3 meters, from $x = 2$ to $x = 5$. Find the total work done by the force on the object.

12. Find the volume of the solid that results when the region enclosed by $y = \sqrt{x}$, $y = 0$, and $x = 9$ is revolved about the line $x = 9$.

13. Find the volume of the solid that results when the region enclosed by $y = \sqrt{x}$, $y = 0$, and $x = 9$ is revolved about the line $y = 3$.

14. Find the volume of the solid that results when the region enclosed by $x = y^2$ and $x = y$ is revolved about the line $x = -1$.

15. Find the volume of the solid that is generated when the region that is enclosed by $y = 1/x^3$, $x = 1$, $x = 2$, $y = 0$ is revolved about the line $x = -1$.

16. Evaluate the integral.

$$\int_1^2 \sqrt{5x-1} \, dx$$

17. Evaluate the integral.

$$\int_{\pi/2}^{\pi} 6 \sin x (\cos x + 1)^5 dx$$

18. Evaluate the integral.

$$\int_1^3 \frac{x+2}{\sqrt{x^2+4x+4}} dx$$