

MA17300 Midterm Exam 1

Practice Test 1

Solve the problem.

1) Suppose that g is continuous and that $\int_2^5 g(x) dx = 4$ and $\int_2^9 g(x) dx = 19$. Find $\int_9^5 g(x) dx$.

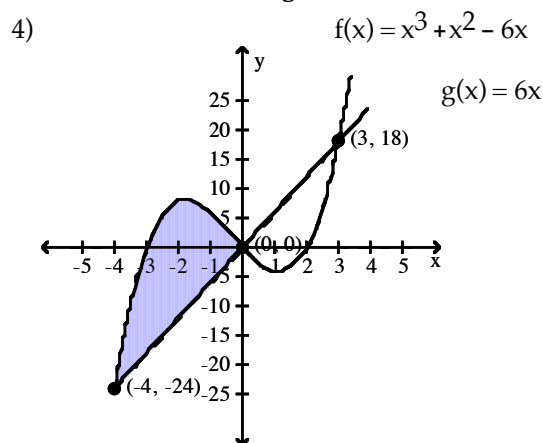
Evaluate the integral by using multiple substitutions.

2) $\int \frac{\sin \sqrt{t}}{\sqrt{t} \cos^3 \sqrt{t}} dt$

Use the substitution formula to evaluate the integral.

3) $\int_{7\pi/6}^{7\pi/3} 2 \cot \frac{t}{7} dt$

Find the area of the shaded region.



Find the volume of the solid generated by revolving the region about the y-axis.

5) The region in the first quadrant bounded on the left by the circle $x^2 + y^2 = 4$, on the right by the line $x = 2$, and above by the line $y = 2$

Find the length of the curve.

6) $x = \int_y^1 \sqrt{t^3 - 1} dt, 1 \leq y \leq 4$

Solve the problem.

7) A conical tank is resting on its apex. The height of the tank is 12 ft, and the radius of its top is 7 ft. The tank is full of gasoline weighing 45 lb/ft^3 . How much work will it take to pump the gasoline to a level 12 ft above the cone's top? Give your answer to the nearest $\text{ft} \cdot \text{lb}$.

Answer Key

Testname: ME1PRAC1

1) -15

2) $\frac{4}{\sqrt{\cos \sqrt{t}}} + C$

3) $7 \ln 3$

4) $\frac{937}{12}$

5) $\frac{8}{3}\pi$

6) $\frac{62}{5}$

7) 415,633 ft • lb