

This practice exam should take an hour.

1. Evaluate the integral $\int \frac{dt}{t^2 + 2t + 3}$
2. Evaluate the integral $\int \cos^2 \theta \sin \theta \, d\theta$.
3. Compute the trapezoid rule approximation to $\int_2^6 x^2 \, dx$ using $n = 4$ subdivisions.
4. Find the volume of the solid generate by revolving the region between $y = x \sin x$ and the x -axis between 0 and π about the y -axis.
5. Calculate the arc length of the graph of $f(x) = \sqrt{9 - x^2}$ over $[0, 3]$.

If you finish the practice exam early, here are some extra problems to try:

1. $\int \frac{x + 4}{x^2 + 1} \, dx$
2. $\int \sqrt{1 + \cos(x)} \, dx$
3. $\int \sec^3(x) \, dx$