Name: _____

Test 1 ♡

February 13, 2024

MATH 201

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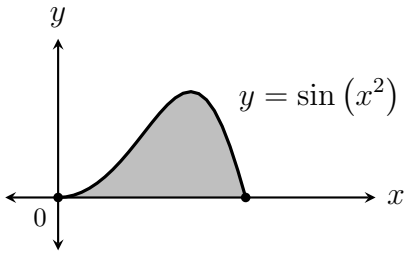
1. Find the area of the region bounded by $y = x^2 - 2x + 1$ and $y = x + 1$

2. The shaded region below is rotated around the y-axis. Find the volume of the resulting solid.



3. Consider the region bounded by $y = e^x$, $y = 0$, $x = 0$ and $x = \ln(3)$.
This region is rotated around the x-axis. Find the volume of the resulting solid.

4. The graph of $y = x^3$ for $0 \leq x \leq 1$ is rotated around the x-axis. Find the area of the resulting surface.

5. Find the arc length of the curve $y = \dfrac{2\sqrt{x}^3}{3}$ from $x = 0$ to $x = 8$.

6. A variable force moves an object from $\ln(\pi/4)$ to $\ln(\pi/2)$ on the number line (units in meters). At any point x between $\ln(\pi/4)$ and $\ln(\pi/2)$, the force is $e^x \cos(e^x)$ Newtons. Find the work done in moving the object from $\ln(\pi/4)$ to $\ln(\pi/2)$.