

Midterm 1, Math 30, Fall 2008, 10/6/08

- 1) Find the volume of a solid when the region bounded by $y = \sin(x)$ and $y=0$ is revolved around the y -axis (10 pts)
- 2) An enclosure for rare reptiles must maintain an average temperature of 30C. The temperature profile during the day is given by $T(t) = T_m \cos(\frac{\pi}{48}t)$ where t is in hours. Find T_m so that the average temperature during 24 hours is 30C. (10 pts)

Evaluate the following integrals: Answer must be in terms of x

3) $\int \frac{\sqrt{x^2 - 1}}{x} dx$ (10 pts)

4) $\int \frac{3x + 5}{x^2 + x - 6} dx$ (10 pts)

- 5) A tank with 2000 gal of water is being drained at the rate given in the diagram. How much water is left in the tank after 50 min ? (12 pts)

