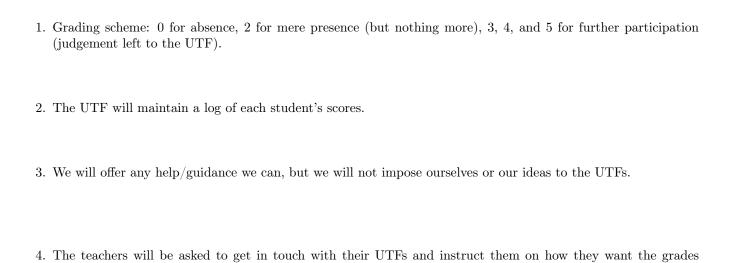
MATH 152, Fall 2019

Worksheet 1



delivered

1. Using u-subs, find the following integral

$$\int \sqrt{4 + \sqrt{x}} dx$$

- 2. Compute the area of the region enclosed by the graphs of the given equations: $x = y^3$ and $x = y^2 + 2y$. Sketch the region.
- 3. Using u-subs, find the following integral

$$\int_{1}^{9} \frac{dx}{(x+1)\sqrt{x} + 2x}$$

- 4. Use the method of cylinders to determine the volume of the solid obtained by rotating the region bounded by $y = \frac{e^{x/2}}{x+2}$, $y = 5 \frac{1}{4}x$, x = -1, and x = 6 about the line x = -2
- 5. A tank in the shape of an inverted cone has a height of 15 meters and a base radius of 4 meters and is filled with water to a depth of 12 meters. Determine the amount of work needed to pump all of the water to the top of the tank. Assume that the density of the water is $1000kg/m^3$.
- 6. Use the method of cylinders to determine the volume of the solid obtained by rotating the region bounded by $y = \frac{e^{x/2}}{x+2}$, $y = 5 \frac{1}{4}x$, x = -1, and x = 6 about the line x = -2
- 7. A rope of length l feet that weighs ρ lbs/ft is lying on the ground. What is the work done in lifting the rope so that it hangs from a beam 2l feet high?