MATH 2130 Problem Workshop 10

1. Evaluate the double iterated integral

$$\int_{-2}^{0}\int_{-3x}^{6} e^{y^2}dydx.$$

2. Evaluate the double integral

$$\iint_R \frac{1}{y-1}dA$$

where R is the region bounded by the curves $y = 2x, y = x, x = 2, x = 3$.

3. Find the volumes of the solids of revolution when the area bounded by the curves

$$y = 2x - x^2, \qquad y = x$$

is rotated about the lines $(a)x = 3 \qquad (b)y = 1 \qquad (c)x + y = -1$.

Answers:

1. $\dfrac{e^{36}-1}{6}$
2. $(5/2)\ln 5 - (3/2)\ln 3 - 2\ln 2$
3. (a) $\dfrac{5\pi}{6}$, (b) $\dfrac{2\pi}{15}$ (c) $\dfrac{7\sqrt{2}\pi}{20}$