MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 2.7 **Math 2000 Worksheet** FALL 2018

For practice only. Not to be submitted.

1. Evaluate $\iint\limits_D \dfrac{1}{\sqrt{16-x^2}}\,dA$ for the given region D.

   (a) $D = \{(x,y) \mid -2 \le x \le 2,\ 0 \le y \le 7\}$

   (b) D is the region bounded above by $y = x$, below by $y = 0$, and to the right by $x = 3$

2. Evaluate each of the following iterated integrals.

   (a) $\displaystyle\int_2^4 \int_1^{\sqrt{y}} x(y^2 - 5y)\,dx\,dy$ (b) $\displaystyle\int_0^1 \int_0^{y^2} \frac{y}{x^2+y^2}\,dx\,dy$

   (c) $\displaystyle\int_1^{\sqrt[4]{10}} \int_0^x y^2\sqrt{x^4-1}\,dy\,dx$ (d) $\displaystyle\int_{\frac{\pi}{2}}^0 \int_0^{\sin(x)} e^{\cos(x)}\,dy\,dx$

3. Evaluate each iterated integral by reversing the order of integration. (You may find it helpful to sketch the region of integration.)

   (a) $\displaystyle\int_0^{\sqrt{\pi}} \int_y^{\sqrt{\pi}} \sin(x^2)\,dx\,dy$ (b) $\displaystyle\int_0^3 \int_{x^2}^9 xe^{y^2}\,dy\,dx$

   (c) $\displaystyle\int_0^4 \int_{\frac{y}{2}}^2 \frac{y}{x^3+1}\,dx\,dy$ (d) $\displaystyle\int_0^1 \int_{\arcsin(x)}^{\frac{\pi}{2}} \sqrt{1+\cos(y)}\,dy\,dx$

4. Use a double integral to find the area of the region bounded by the indicated curves.

   (a) $y = x^2 + 2x$, $y = 24 - x^2$

   (b) $x = \sqrt{9-y}$, $y = 9 - 3x$