

Math 2204: Written HW5 (Due Friday 3/7, 5pm)

No calculator or other electronic devices for written HWs.

Hand in ALL WORK AND REASONING for the following problems.

- Section 15.1: 3b, 28.

NOTE: Problems A-D and each of the problems in 15.2-3 require at least one appropriate sketch. Choose the easiest setup if you have a choice.

No credit for a setup if there is no sketch.

- Section 15.2: 19, 20, 25, 58, 64, 74.

- Section 15.3: 8 (sketch only; To show work: write the $2 \sin \theta$ -curve in xy -coordinates), 22 (setup only), 41, 49 (setup only).

- A) Let D be the region in the first quadrant bounded by the y -axis, $y = 4 - x^2$, and $y = 2$. Set up a double integral to compute the area of D in both $dx dy$ **and** $dy dx$ order. Include the formula for the area.

- B) Compute $\iint_D x \, dA$. The region D is in the first quadrant inside $x^2 + y^2 = 4$, outside $x^2 + y^2 = 1$, and between the lines $y = x/\sqrt{3}$ and $y = \sqrt{3}x$.

- C) Compute $\int_0^1 \int_x^1 e^{y^2} \, dy \, dx$.

- D) Compute $\int_0^{\frac{\sqrt{2}}{2}} \int_x^{\sqrt{1-x^2}} e^{x^2+y^2} \, dy \, dx$.