

Math 3298 Worksheet 17: More polar integration

Group members (1 to 3): _____

(1) Convert the following integral to polar coordinates and evaluate it:

$$\int_{-1}^{-1/2} \int_{-\sqrt{3}x}^{\sqrt{4-x^2}} x^2 y^2 \, dy \, dx + \int_{-1/2}^1 \int_{\sqrt{1-x^2}}^{\sqrt{4-x^2}} x^2 y^2 \, dy \, dx + \int_1^2 \int_0^{\sqrt{4-x^2}} x^2 y^2 \, dy \, dx$$