

Non-Graphical Answers to Practice Exam 4 for the Final Exam

2.

$$\text{Area} = \int_0^{2\pi} \frac{1}{2} (1 - 4 \sin 2\theta)^2 d\theta = \boxed{9\pi}$$

4.

$$\text{Area} = \int_0^{2\pi} y'(t)x(t) dt = \boxed{\frac{5}{32}\pi}$$

5.

$$\text{Arclength} = \int_{-1}^{\sqrt{3}} \sqrt{(x'(t))^2 + (y'(t))^2} dt = \boxed{\frac{1}{2} \left(\ln(2 + \sqrt{3}) - \ln(\sqrt{2} - 1) + 2\sqrt{3} + \sqrt{2} \right)}$$