

AP Calculus BC – Unit 8 Part 2 Extra Practice

8.4 – Extra Practice

Plot the (r, θ) polar coordinate and find the corresponding rectangular (x, y) coordinate.

#13b. $\left(7, \frac{5\pi}{4}\right)$

#14b. $\left(-2, \frac{11\pi}{6}\right)$

The rectangular (x, y) coordinate is given. Plot the coordinate, then find two sets of polar coordinates for the same location with $0 \leq \theta < 2\pi$

#15b. $(0, -6)$

#16b. $(3, -2)$

Convert the rectangular equation to polar form and sketch its graph.

#17b. $x^2 + y^2 = 16$

#18b. $x^2 - y^2 = 4$

#19b. $x = 12$

#20b. $xy = 4$

#21b. $(x^2 + y^2)^2 - 9(x^2 - y^2) = 0$

Convert the polar equation to rectangular form and sketch its graph.

#22b. $r = -5$

#23b. $r = 5 \cos(\theta)$

#24b. $\theta = \frac{5\pi}{6}$

Find the points of intersection of the graphs of the equations

$$\begin{aligned} r &= 3(1 + \sin(\theta)) \\ \#25b. \quad r &= 3(1 - \sin(\theta)) \end{aligned}$$

$$\begin{aligned} r &= 3 + \sin(\theta) \\ \#26b. \quad r &= 2 \csc(\theta) \end{aligned}$$

8.5 – Extra Practice

Find the points of vertical and horizontal tangency (if any) to the polar curve.

#4b. $r = 1 - \cos(\theta)$

Find the arc length.

#5b. $r = \sin(3 \cos(\theta)), \quad 0 \leq \theta \leq \pi$

#6b. One petal of $r = 5 \sin(3\theta)$

8.6 – Extra Practice

Write (and evaluate with calculator) an integral that represents the area of the entire figure.

#5b. *One petal of* $r = \cos(2\theta)$

#6b. *interior of* $r = 6\sin(\theta)$

#7b. *one petal of* $r = \cos(5\theta)$

#8b. *inner loop of* $r = 2 - 4\cos(\theta)$

Write (and evaluate with calculator) an integral that represents the indicated area.

#9b. *inside* $r=1$ and *outside* $r=2\cos(\theta)$

#10b. *common interior of* $r=4\cos(\theta)$ and $r=2$