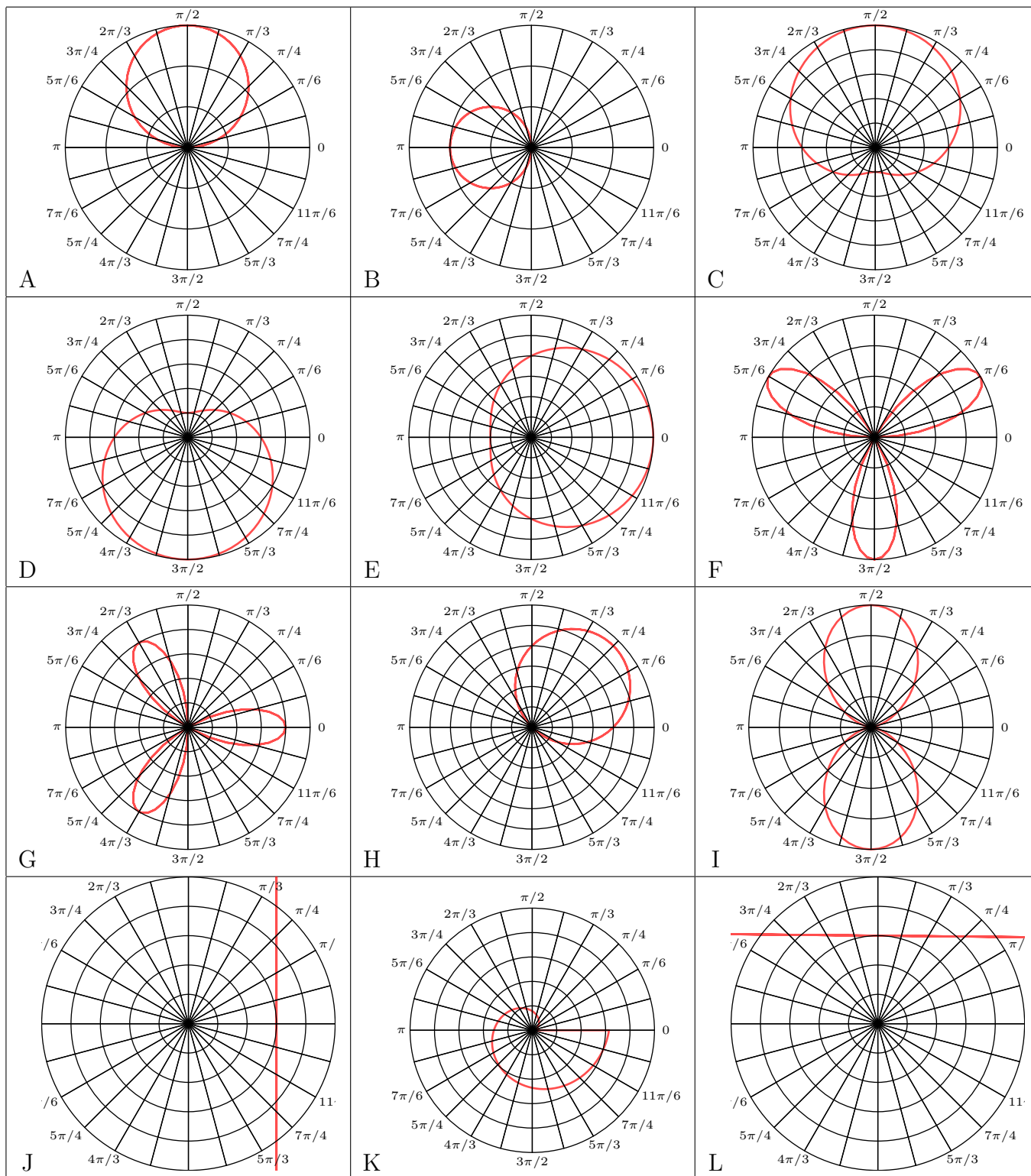


1 Matching



- | | | |
|-----------------------------|--|---------------------------|
| 1. $r = \cos(\theta)$ | 5. $r = 4 + 2 \cos(\theta)$ | 9. $r = 4 \sin^2(\theta)$ |
| 2. $r = -2 \cos(\theta)$ | 6. $r = 4 \sin(3 * \theta)$ | 10. $r = 3 \sec(\theta)$ |
| 3. $r = 3 + 2 \sin(\theta)$ | 7. $r = 4 \cos(3 * \theta)$ | 11. $r = \theta/2$ |
| 4. $r = 3 - 2 \sin(\theta)$ | 8. $r = 4 \sin(\theta) + \cos(\theta)$ | 12. $r = 3 \csc(\theta)$ |

2 Multiple Choice

1. Convert the polar coordinate to rectangular coordinates: $(-2, 2\pi/3)$
2. Convert the rectangular coordinate to polar coordinates: $(15, 5\sqrt{3})$
3. Convert the rectangular coordinate to polar coordinates: $(-12, -12)$
4. Convert the rectangular equation to polar: $x^2 + y^2 = 16$
5. Convert the rectangular equation to polar: $2xy = 1$
6. Convert the polar equation to rectangular: $\theta = 2\pi/3$
7. Convert the polar equation to rectangular: $r = \frac{2}{1 + \sin \theta}$
8. Find the maximum value of $|r|$ for the graph $r = 6 + 12 \cos(\theta - \pi/3)$ and the θ where it occurs.
9. Find the maximum value of $|r|$ for the graph $r = \frac{1}{3 + 2 \sec \theta}$ and the θ where it occurs.
10. Which of the following are x -intercepts of $r = 3(1 - 2 \cos \theta)$?
11. Which of the following are y -intercepts of $r = 4 \sin 3\theta$?
12. Find the intersection points of $r = 3 \cos \theta$ and $r = \sqrt{3} \sin \theta$

3 FRQ

Calculator Active - 2008.1 BC Exam (Form B)

A particle moving along a curve in the xy -plane has position $(x(t), y(t))$ at time $t \geq 0$ with

$$\frac{dx}{dt} = \sqrt{3t} \text{ and } \frac{dy}{dt} = 3 \cos\left(\frac{t^2}{2}\right)$$

The particle is at position $(1, 5)$ at time $t = 4$.

1. Find the acceleration vector at time $t = 4$.
2. Find the y -coordinate of the position of the particle at time $t = 0$.
3. On the interval $0 \leq t \leq 4$, at what time does the speed of the particle first reach 3.5 ?
4. Find the total distance traveled by the particle over the time interval $0 \leq t \leq 4$.