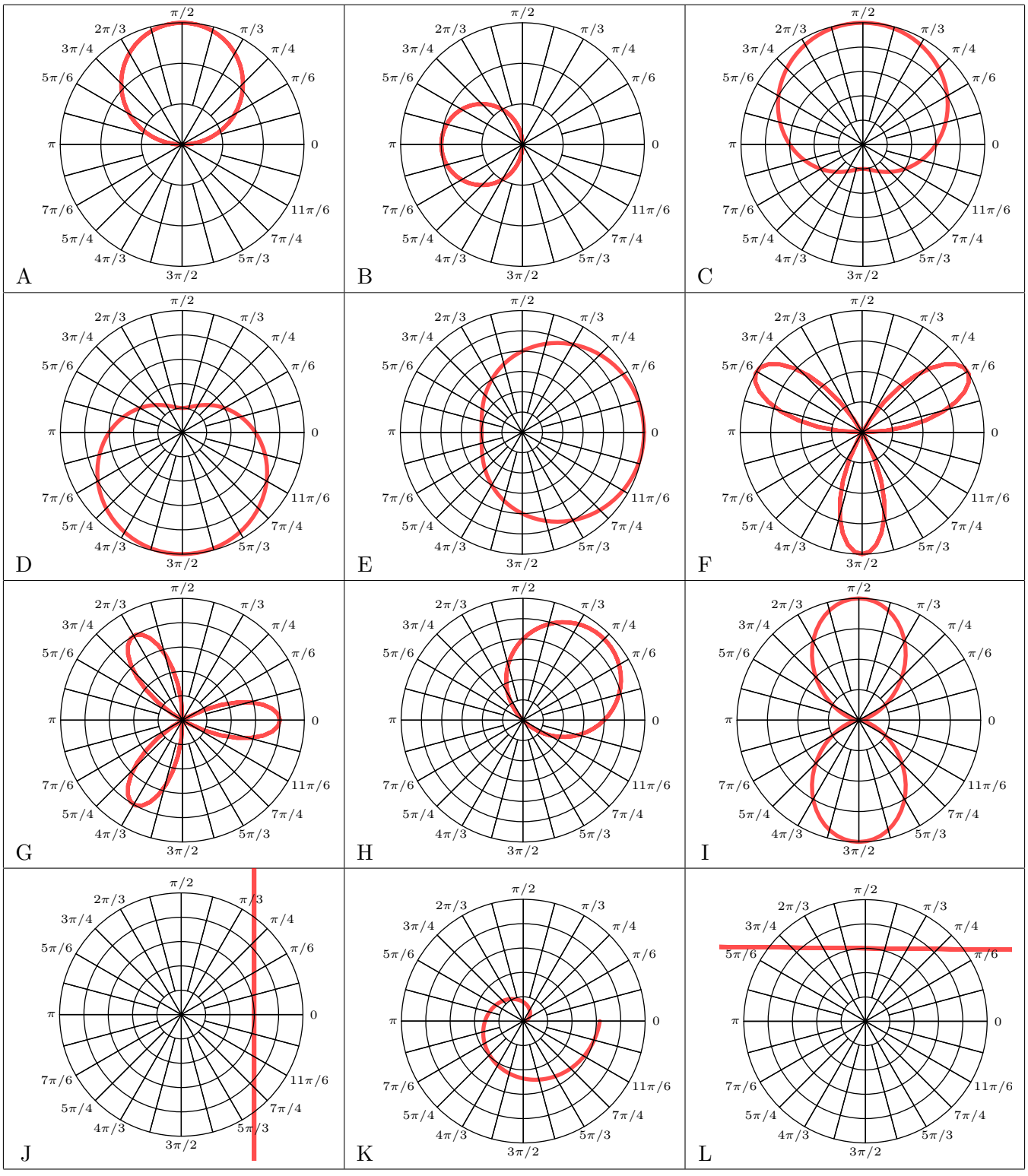
1 Matching



1. $r = \cos(\theta)$
2. $r = -2\cos(\theta)$
3. $r = 3 + 2\sin(\theta)$
4. $r = 3 - 2\sin(\theta)$
5. $r = 4 + 2\cos(\theta)$
6. $r = 4\sin(3 * \theta)$
7. $r = 4\cos(3 * \theta)$
8. $r = 4\sin(\theta) + \cos(\theta)$
9. $r = 4\sin^2(\theta)$
10. $r = 3\sec(\theta)$
11. $r = \theta/2$
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: $r = \dfrac{2}{1 + \sin\theta}$
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 $r = \dfrac{1}{3 + 2\sec\theta}$ 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 of 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 $0 \leq t \leq 4$.