

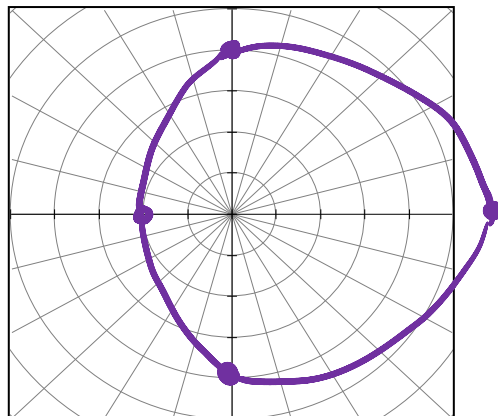
Determine the equation and then draw a graph the equation on the polar graph.

- 1) Limacon reflexive about (lying along) the positive x-axis with x-intercepts 6 and -2, y-intercepts of +/- 4, and no inner loop. <sup>cos</sup>  $a > b$

$$r = 4 + 2\cos\theta$$


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$a = 4$   
 $a + b = 6$   
 $b = 2$

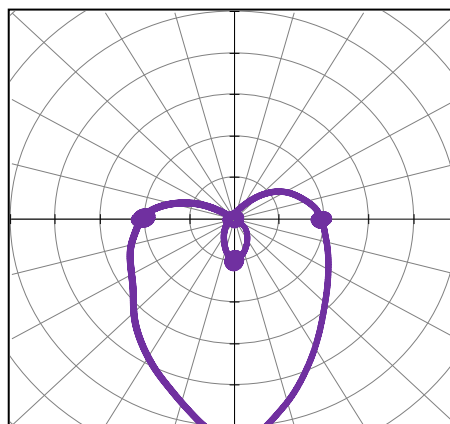


- 2) Limacon reflexive about the negative y-axis with x-intercepts +/- 2, y-intercepts at -1 and -5, with an inner loop. <sup>-sin</sup> and 0

$$r = 2 - 3\sin\theta$$


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$a = 2$   $a < b$   
 $a + b = 5$   
 $b = 3$

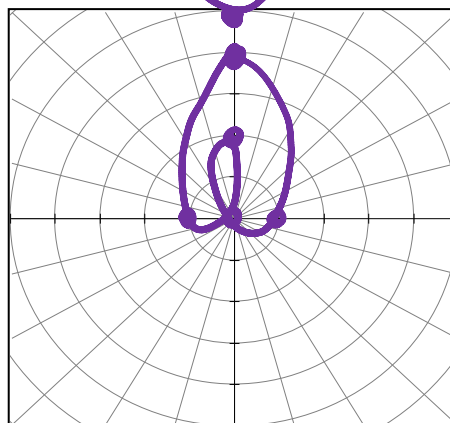


- 3) Limacon lying along the positive y-axis with x-intercepts +/- 1, y-intercepts at 2 and 4, with an inner loop. <sup>sin</sup> and 0

$$r = 1 + 3\sin\theta$$


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$a < b$   
 $a = 1$   
 $a + b = 4$   
 $b = 3$



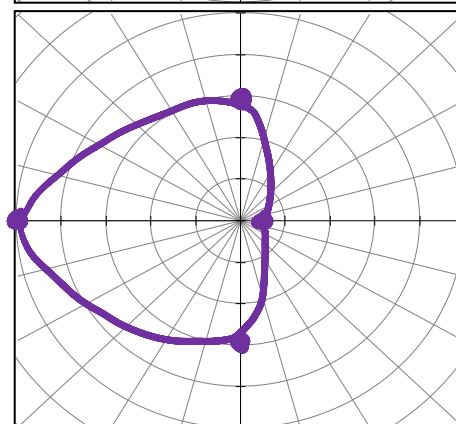
- 4) Limacon lying along the negative x-axis, with x-intercepts -10 and 2, y-intercepts +/- 6, with no inner loop. <sup>-cos</sup>

$$r = 6 - 4\cos\theta$$

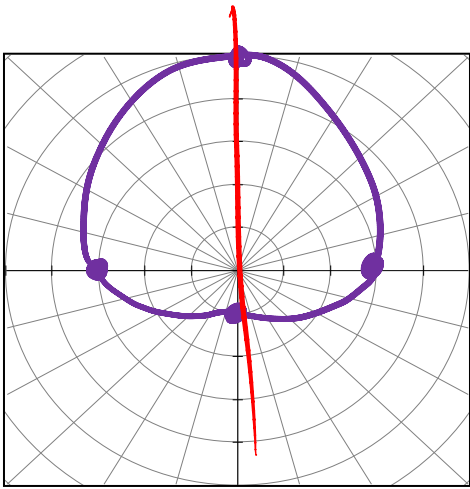

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$a > b$   
 $a = 6$   
 $a + b = 10$   
 $b = 4$

$$r = a \pm b \cos\theta$$



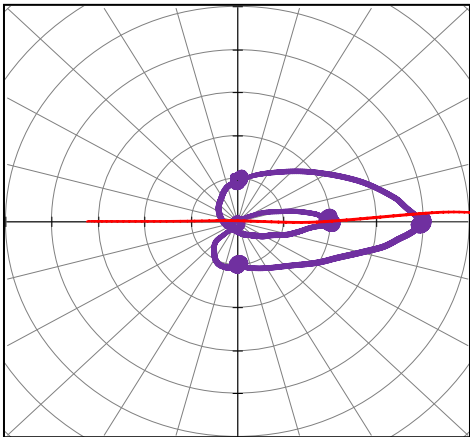
6 by 2's



$a=3$   $b=2$   
 $a > b$   
 no inner loop  
 +y-axis  
 $a+b=5$   
 $b-a=-1$

5.  $r(\theta) = -3 + 2\sin\theta$

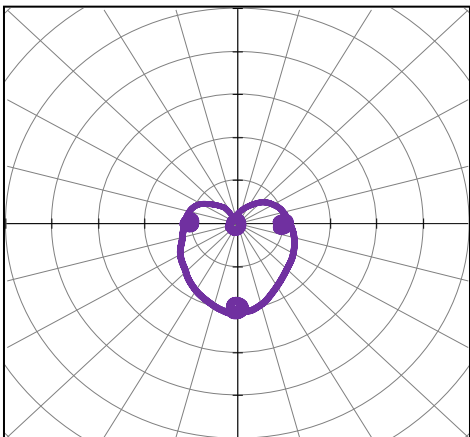
- A) Name of curve limaçon  
 B) x-intercepts 3, -3  
 C) y-intercepts -1, 5  
 D) Symmetry y-axis



$a=1$   $b=3$   
 $a < b$   
 inner loop  
 +x-axis  
 $a+b=4$   
 $b-a=2$

6.  $r(\theta) = 1 + 3\cos\theta$

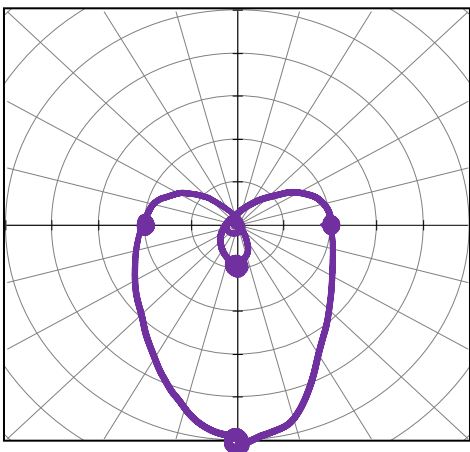
- A) Name of curve limaçon  
 B) x-intercepts 2, 4, 0  
 C) y-intercepts 1, -1, 0  
 D) Symmetry x-axis



$a=1$   $b=1$   
 neg y-axis  
 length=2

7.  $r(\theta) = 1 - \sin\theta$

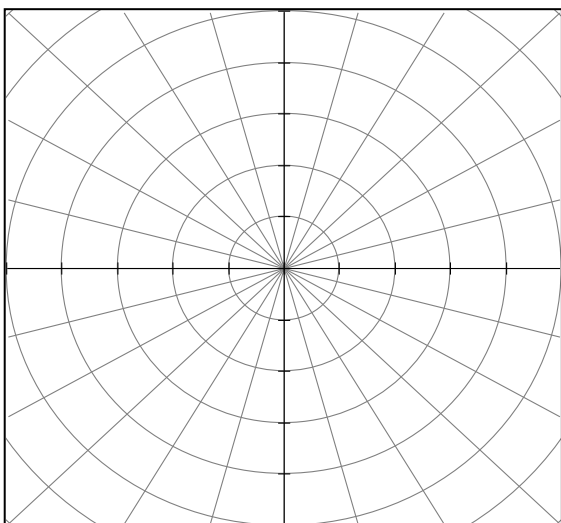
- A) Name of curve cardioid  
 B) x-intercepts -1, 0, 1  
 C) y-intercepts 0, -2  
 D) Symmetry y-axis



$a=2$   $b=3$   
 -y-axis  
 $a < b$   
 inner loop  
 $a+b=5$   
 $b-a=1$   
 reflected!

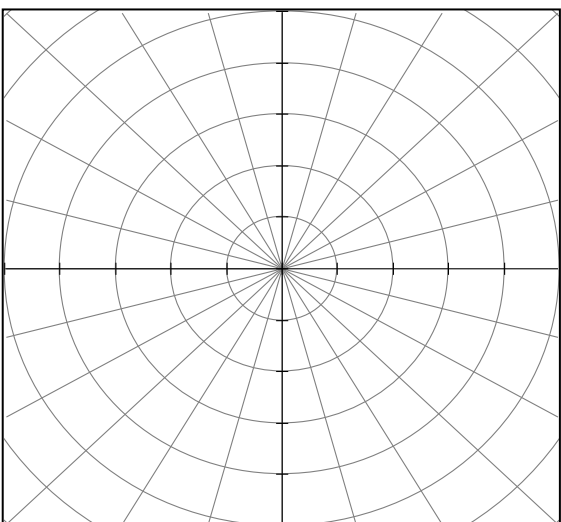
8.  $r(\theta) = 2 - 3\sin\theta$

- A) Name of curve limaçon  
 B) x-intercepts 2, -2, 0  
 C) y-intercepts -1, 5, 0  
 D) Symmetry y-axis



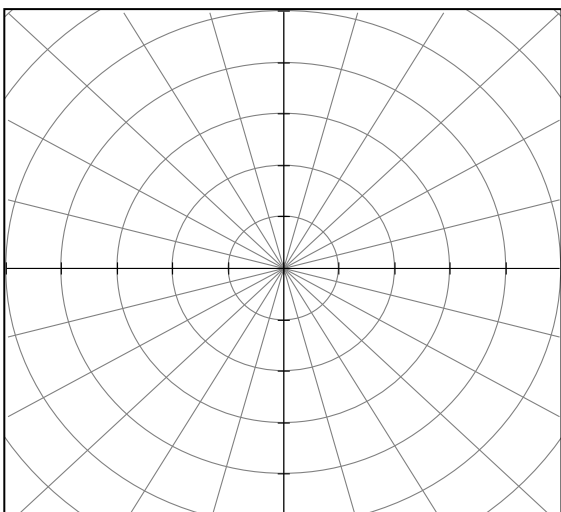
10.  $r(\theta) = 3 \sin 2\theta$

- A) Name of curve \_\_\_\_\_
- B) Number of Petals \_\_\_\_\_
- C) Angle of 1<sup>st</sup> petal \_\_\_\_\_
- D) Angle between petals \_\_\_\_\_
- E) Length of petals \_\_\_\_\_
- F) Symmetry \_\_\_\_\_



11.  $r(\theta) = 2 \sin \theta$

- A) Name of curve \_\_\_\_\_
- B) Number of Petals \_\_\_\_\_
- C) Angle of 1<sup>st</sup> petal \_\_\_\_\_
- D) Angle between petals \_\_\_\_\_
- E) Length of petals \_\_\_\_\_
- F) Symmetry \_\_\_\_\_



12.  $r(\theta) = -2$

- A) Name of curve \_\_\_\_\_
- B) x-intercepts \_\_\_\_\_
- C) y-intercepts \_\_\_\_\_

D) Symmetry\_\_\_\_\_