

# CALCULUS 2



## CALCULUS - POLAR CURVES!



**Circuit Style:** Start your brain training in Cell #1, search for your answer. Label that block as Cell #2 and continue to work until you complete the entire exercise for your Calculus Brain Training.

Name: \_\_\_\_\_

Answer:  $\frac{\pi}{3}$

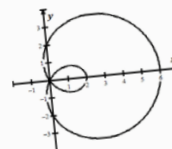
Find the slope of the tangent line of

$$r = 4 \sin \theta \text{ at } \theta = \frac{\pi}{3}$$

#1

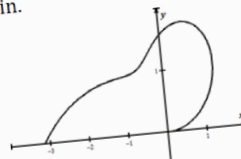
Answer: 24.708

Find the area of the region inside the outer loop and outside the inner loop of  $r = 2 + 4 \cos \theta$ .



Answer: 4.913

For the curve  $r = \theta + \sin 2\theta$ , find the angle interval  $0 \leq \theta \leq \frac{\pi}{2}$  where the curve is from the origin.



Answer: 8.378

**FREEBIE!**

# Polar Curves Circuit-Style Training

# CALCULUS - POLAR CURVES!

Name: \_\_\_\_\_



**Circuit Style:** Start your brain training in Cell #1, search for your answer. Label that block as Cell #2 and continue to work until you complete the entire exercise for your Calculus Brain Training.

Answer:  $\frac{\pi}{3}$

#1

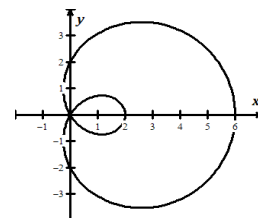
Find the slope of the tangent line of

$$r = 4 \sin \theta \text{ at } \theta = \frac{\pi}{3}$$

Answer: 24.708



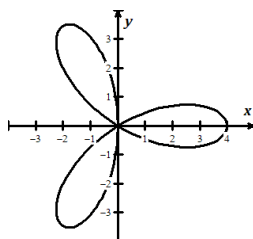

Find the area of the region inside the outer loop and outside the inner loop of  $r = 2 + 4 \cos \theta$ .



Answer:  $r = 6 \cos \theta$

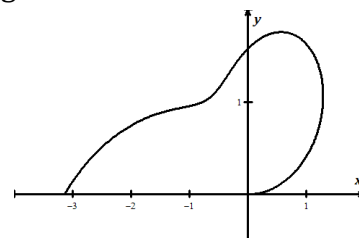



Find the area enclosed by two loops of the polar curve  $r = 4 \cos 3\theta$ .



Answer: 4.913

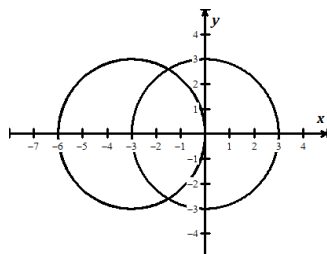
Given the curve  $r = \theta + \sin 2\theta$ , find the angle  $\theta$  in the interval  $0 \leq \theta \leq \frac{\pi}{2}$  where the curve is farthest from the origin.



Answer:  $\frac{\pi}{4}, \frac{3\pi}{4}$



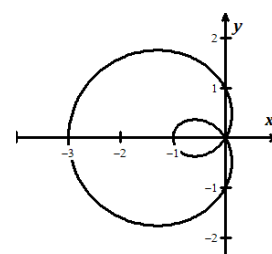

Find the area inside  $r = -6 \cos \theta$  and outside  $r = 3$ .



Answer: 8.378



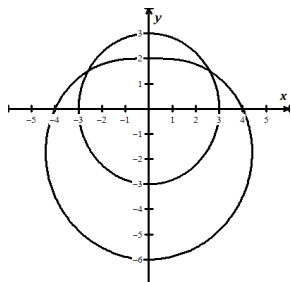

Find the area of the region inside the outer loop of  $r = 1 - 2 \cos \theta$ .



Answer: 4.443



Find the area inside the graph of  $r = 3$   
and also inside the graph of  $r = 4 - 2 \sin \theta$ .



Answer:  $-\sqrt{3}$

Find the value(s) of  $\theta$  on the curve:  $r = 3 \cos \theta$   
where the tangent line is horizontal over  
 $0 \leq \theta \leq \pi$ .

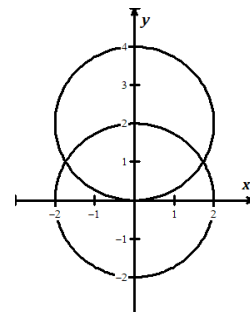
Answer:  $x^2 + (y - 3)^2 = 9$

Write an equivalent polar equation for  
 $(x - 3)^2 + y^2 = 9$

Answer: 8.881



Find the area of the common interior of  
 $r = 2$  and  $r = 4 \sin \theta$ .



Answer: 17.219



Find the length of the polar curve,  $0 \leq \theta \leq \frac{\pi}{2}$   
 $r = 2 \sin \theta + 2 \cos \theta$

Answer: 33.351

Given  $r^2 = 6r \sin \theta$ , write an equivalent  
rectangular equation.

# CALCULUS - POLAR CURVES!

Name: \_\_\_\_\_



**Circuit Style:** Start your brain training in Cell #1, search for your answer. Label that block as Cell #2 and continue to work until you complete the entire exercise for your Calculus Brain Training.

Answer:  $\frac{\pi}{3}$

#1

Find the slope of the tangent line of

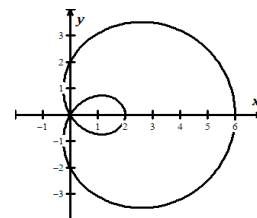
$r = 4 \sin \theta$  at  $\theta = \frac{\pi}{3}$

Answer: 24.708



#6

Find the area of the region inside the outer loop and outside the inner loop of  $r = 2 + 4 \cos \theta$ .

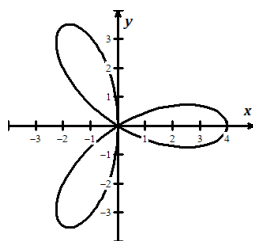


Answer:  $r = 6 \cos \theta$



#9

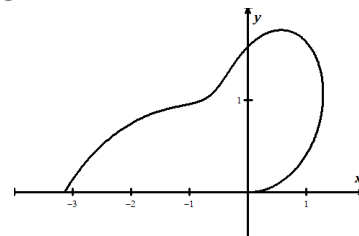
Find the area enclosed by two loops of the polar curve  $r = 4 \cos 3\theta$ .



Answer: 4.913

#12

Given the curve  $r = \theta + \sin 2\theta$ , find the angle  $\theta$  in the interval  $0 \leq \theta \leq \frac{\pi}{2}$  where the curve is farthest from the origin.

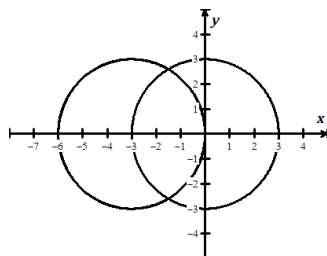


Answer:  $\frac{\pi}{4}, \frac{3\pi}{4}$



#3

Find the area inside  $r = -6 \cos \theta$  and outside  $r = 3$ .

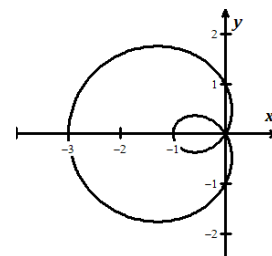


Answer: 8.378



#10

Find the area of the region inside the outer loop of  $r = 1 - 2 \cos \theta$ .

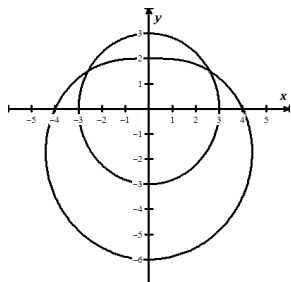


Answer: 4.443



#5

Find the area inside the graph of  $r = 3$  and also inside the graph of  $r = 4 - 2 \sin \theta$ .



Answer:  $-\sqrt{3}$

#2

Find the value(s) of  $\theta$  on the curve:  $r = 3 \cos \theta$  where the tangent line is horizontal over  $0 \leq \theta \leq \pi$ .

Answer:  $x^2 + (y - 3)^2 = 9$

#8

Write an equivalent polar equation for  $(x - 3)^2 + y^2 = 9$

Answer: 8.881



#11

Find the area of the common interior of  $r = 2$  and  $r = 4 \sin \theta$ .

Answer: 4.443 Find the area inside the graph of $r = 3$ and also inside the graph of $r = 4 - 2 \sin \theta$ .	Answer: $-\sqrt{3}$ Find the value(s) of $\theta$ on the curve $r = 3 \cos \theta$ where the tangent line is horizontal over $0 \leq \theta \leq \pi$ .
Answer: $x^2 + (y - 3)^2 = 9$ Write an equivalent polar equation for $(x - 3)^2 + y^2 = 9$ .	Answer: 8.881 Find the area of the common interior of $r = 2$ and $r = 4 \sin \theta$ .
Answer: 17.219 Find the length of the polar curve $0 \leq \theta \leq \frac{\pi}{2}$ , $r = 2 \sin \theta + 2 \cos \theta$ .	Answer: 33.351 Given $r^2 = 6r \sin \theta$ , write an equivalent rectangular equation.

Answer: 17.219



#4

Find the length of the polar curve,  $0 \leq \theta \leq \frac{\pi}{2}$   
 $r = 2 \sin \theta + 2 \cos \theta$

Answer: 33.351

#7

Given  $r^2 = 6r \sin \theta$ , write an equivalent rectangular equation.

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