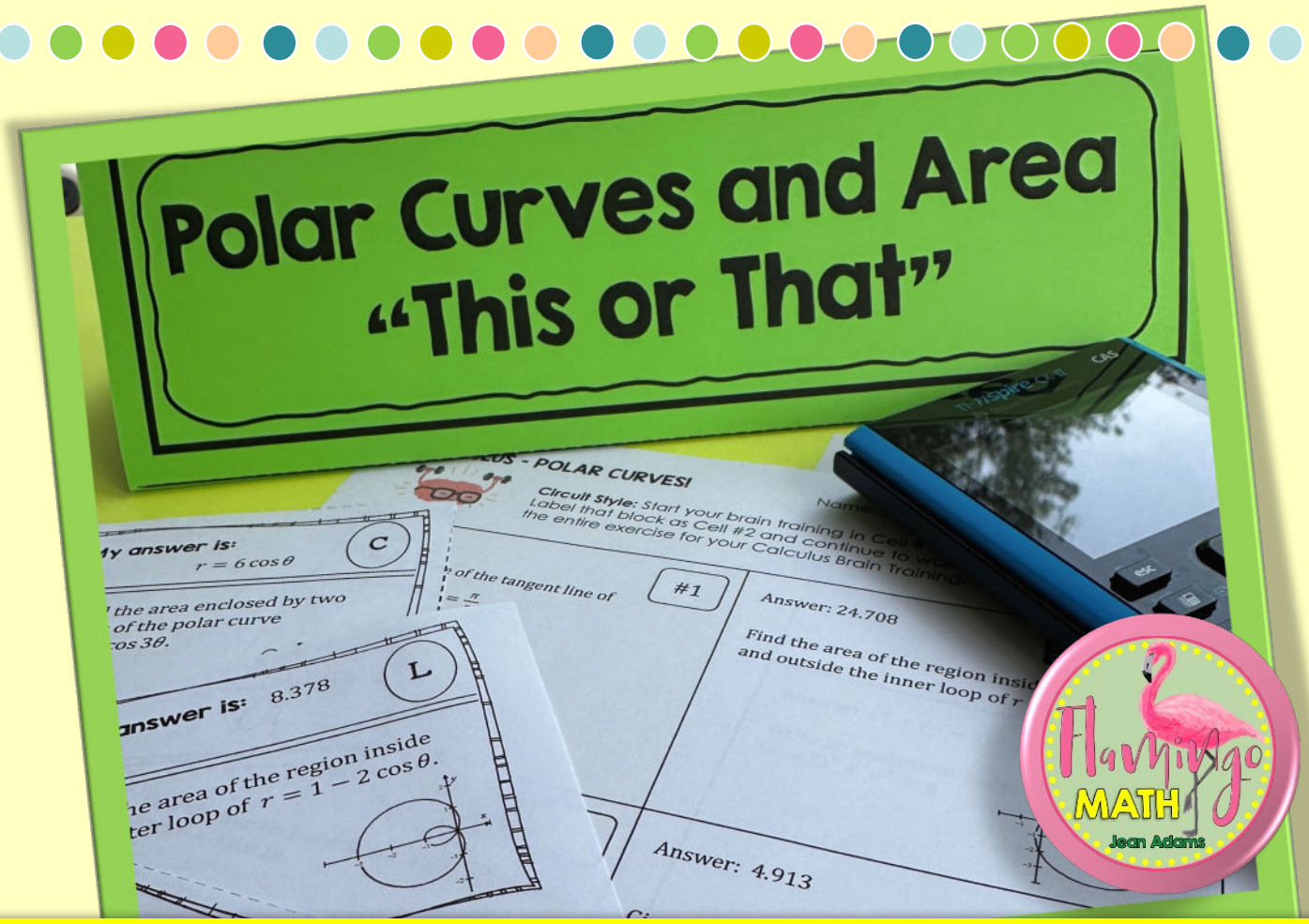
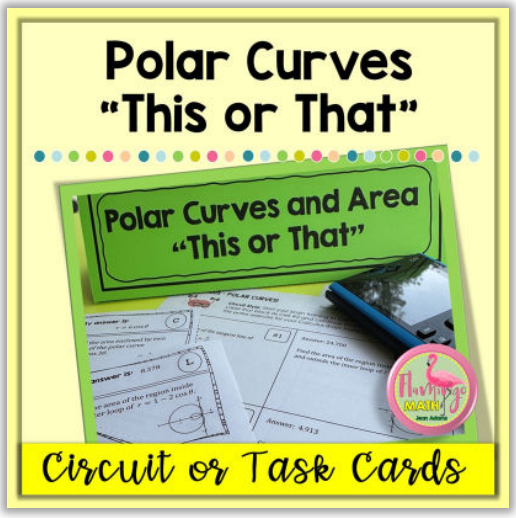
Polar Curves "This or That"



Circuit or Task Cards

Polar Curves: This or That



KEY CONCEPTS/TOPICS:

★ Find arc lengths
★ Find horizontal tangent line
★ Define rectangular and polar form
★ Find area of polar regions

GENERAL DIRECTIONS:

Your AP Calculus BC students will have 12 self-checking question stems in a circuit-style training for polar functions.
Or choose an optional set of Scavenger Hunt Task Cards.

About The Product

Polar Curves "This or That"

PREPARATION: Choose which activity to use for this practice set. The questions are the same. The task cards require supporting work. The circuit activity is self-checking.

Create the table tent for your station review day.

"This": Task Cards Copy a student recording sheet for supporting work, if you want that accountability on the 12 task cards. Copy each set of cards on a card stock, (Task cards 1-14). Cut apart cards and laminate for durability. Place cards in a zipped bag for organization.
"Or That": Circuit Activity Copy the 12-question scavenger hunt circuit activity for each student.

GENERAL DIRECTIONS:
Students are given a set of 12 cards with Polar Curve prompt to evaluate, or a 12-question Circuit-Style activity. There is a student recording sheet to support work. A table tent is available to use as a station at the end-of-the-year review period.

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"This or That" Activity: Circuit or Task Cards

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.

#1

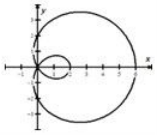
Answer: $\frac{\pi}{3}$

Find the slope of the tangent line of

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

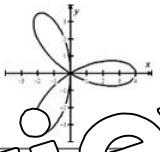
Answer: 24.708

Fi[illegible]ea of the region inside the outer loop [illegible] 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 $r = 4\cos 3\theta$.

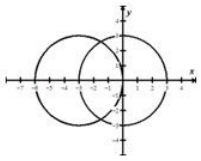


Answer: 4.913

Give[illegible] θ in[illegible] farth[illegible]

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

[illegible]e a[illegible]side $r = [illegible]\cos\theta$ and outside $r =$ [illegible]



Ans[illegible]

Find[illegible] oute[illegible]

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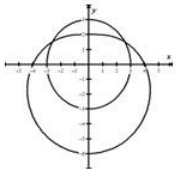
Answer: 4.443

Find the area inside [illegible] $r = 3$[illegible] and also inside the g[illegible] of $r = [illegible] - 2\sin\theta$.



Answer: [illegible]

[illegible]r: [illegible]

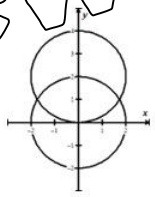
Find the value(s) of θ on the curve: $r = 3\cos\theta$ where the tangent line is horizontal over $0 \le \theta \le \pi$.

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

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

Answer: 8.33774

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



Answer: 17.219

Find the length of the polar curve, $0 \le \theta \le \frac{\pi}{2}$

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

Answer: 33.351

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

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Preview Preview Preview Preview Preview Preview Preview

Polar Curves and Area "This or That"

Polar Curves and Area "This or That"

Tape this edge to the opposite side to create a table tent

Copy this "table tent" on a colorful piece of cardstock. Then fold the tent lengthwise along the dotted lines. Tape the folded "flap" to secure a triangular shaped tent for the table.

Fold

Polar Curves, Area and Arc Length
Scavenger Hunt

Name _____
Date _____ Period_____

Pick any card to begin your Scavenger Hunt, find the solution on another card. This is your second question. Continue in the fashion until you complete the activity.

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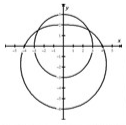
My answer is: 4.443 **R**

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



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My answer is: $-\sqrt{3}$ **R**

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

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My answer is: $x^2 + (y-3)^2 = 9$ **X**

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

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My answer is: 8.33774 **I**

Find the area of the region interior [illegible]

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My answer is: 17.219 **A**

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

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My answer is: 33.351 **O**

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

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My answer is: $\frac{\pi}{3}$ **D**

Find the slope of the tangent line of $r = 4\sin\theta$ at $\theta = \frac{\pi}{3}$

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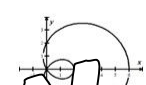
My answer is: 24.708 **F**

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



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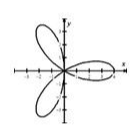
My answer is: [illegible] $r = 6\cos\theta$ **[illegible]**

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



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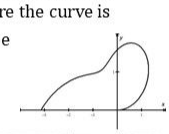
My answer is: 4.913 **P**

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



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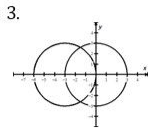
My answer is: $\frac{\pi}{4}, \frac{3\pi}{4}$ **E**

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



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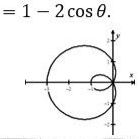
My answer is: 8.378 **L**

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



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