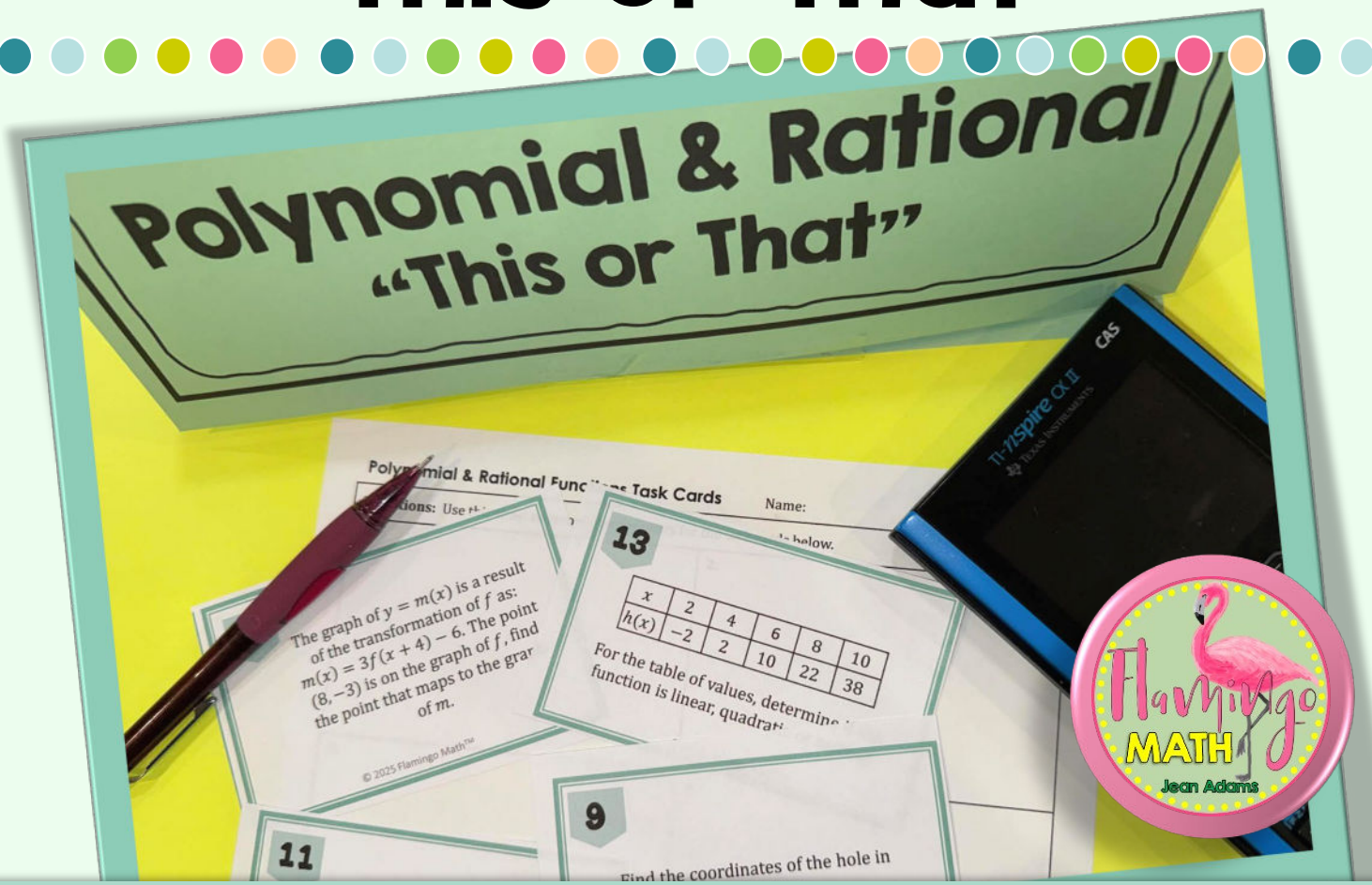
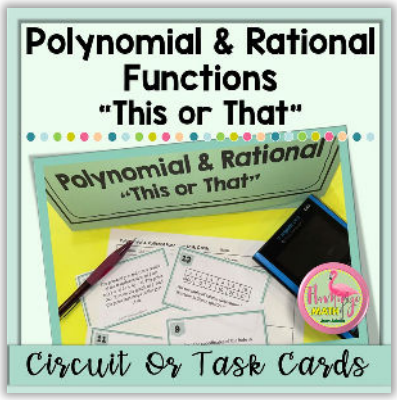
Polynomial & Rational Functions "This or That"



Circuit Or Task Cards

Polynomial and Rational Functions



KEY CONCEPTS/TOPICS:

- ★ Find rates of change
- ★ Find average rates of change
- ★ Find key characteristics of polynomial functions
- ★ Find zeros, holes, asymptotes and end-behavior of rational functions
- ★ Write equations for transformations
- ★ Match data to appropriate models
- ★ and more . . .

Product Overview

Polynomial and Rational Functions Circuit-Style Training

This resource is designed to help your AP Precalculus students gain proficiency in their ability to use the language of Exponential and Logarithmic Functions in a scavenger-hunt type circuit activity.

This is a self-checking assignment in a "Circuit-style" training. Students start their brain training in Cell #1, then search for the answer. They label that block as Cell #2 and continue to work until they complete the entire exercise for the Brain Training Activity.

There are 16 question stems in the self-checking circuit.

COLLEGE BOARD STANDARDS ALIGNMENT:

Topic 1.1: Change in Tandem
Topic 1.2: Rates of Change
Topic 1.3: Rates of Change in Linear and Quadratic Functions
Topic 1.5: Polynomial Functions and Complex Zeros
Topic 1.6: Polynomial Functions and End Behavior
Topic 1.7: Rational Functions and End Behavior
Topic 1.8: Rational Functions and Zeros
Topic 1.9: Rational Functions and Vertical Asymptotes
Topic 1.10: Rational Functions and Holes
Topic 1.11: Equivalent Representations of Polynomial and Rational Expressions
Topic 1.12: Transformations of Functions
Topic 1.13: Function Model Selection and Assumption

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1

If the output of a function $f(x)$ increases as x increases, but the rate of change is decreasing, the graph is _____.

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2

Calculate the average rate of change for $f(x) = x^2 + 3x$ on the interval $[1, 4]$.

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3

A polynomial has 3 turning points. What is the minimum possible degree of this polynomial?

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4

Describe the end behavior as x decreases without bound of $g(x) = -2x^3 + 5x^2 - 1$

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5

If a polynomial has ... zero, ... direction, ... value ... also a zero?

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6

... determine the horizontal asymptote of $h(x) = \frac{4x^2-5}{2x^2+1}$

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7

Identify the zero(s) of the function $f(x) = \frac{x^2-9}{x+5}$

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8

At what value of x does the function k have a vertical asymptote?

$k(x) = \frac{x+2}{x^2-5x-14}$

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9

Find the coordinates of the hole in the function

$h(x) = \frac{x^2+x-6}{x-2}$

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10

Use polynomial long division to rewrite the expression $\frac{2x+5}{x-1}$

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11

... the slant ... e fo ...

$(x) = \frac{x^2-5}{x-2}$

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12

... a transformation function $g(x)$ for the function f where the graph has a horizontal translation 3 units right and a vertical translation 2 units up.

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13

x	2	4	6	8	10
$h(x)$	-2	2	10	22	38

For the table of values, determine if the function is linear, quadratic or neither.

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14

Write a polynomial $g(x)$ in factored form that has zeros at $x = 0$, multiplicity 2, $x = -2$ and $x = 3$

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15

If the first differences of a data set are constant, what type of function model should be used?

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16

The ... of ... ult ... e ... ...

$m(x) = f(x + 4)$ ... The point ... is ... e graph of f, find ... e po... at maps to the graph of m.

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Polynomial & Rational "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. Fold the tent lengthwise along the dotted lines. Tape the folded "flap" to secure a triangular shape. Fold the bottom edges outward for the table.

Polynomial & Rational Functions Task Cards

Name:

Directions: Use this sheet to record your answers for the task cards below.

1.	**2.**
3.	
5.	**6.**
7.	**8.**

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Preview
Preview
Preview
Preview
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"This or That" Activity: Circuit or Task Cards

Polynomial & Rational Functions 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 **Polynomial & Rational Functions Brain Tr**

Answer: $(4, -15)$ #1

If the output of a functi(x) increases as x increases, bt ra$e$ change is decng gh .

Answer: $2 + \frac{7}{x-1}$

e slant asymptote for

$$f(x) = \frac{2x^2 - 5x + 7}{x - 2}$$

A$ver: $3 + 2i$

Determine the horizontal asymptote of $h(x) = \frac{4x^2-5}{2x^2+1}$

Answer: {-3, 3}

At what value of x does the function k have a vertical asymptote?

$$k(x) = \frac{x+2}{x^2-5x-14}$$

Answer: $g(x) = f(x-3) + 2$

x	2	4	6	8	10
$h(x)$	-2	2	10	22	38

For the table of values, determi$f$ function is linear, quad$c$ orth

Answer: 8

A p$

A$er

Find the coordinates of the hole in the function

$$h(x) = \frac{x^2+x-6}{x-2}$$

Answer: $g($

If the fir$ constan$

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Answer: $y = 2$

Identify the zero(s) of the function $f(x) = \frac{x^2-9}{x+5}$

$er: 4

Describe the end behavior as x decreases without bound of $g(x) = -2x^3 + 5x^2 - 1$

Answer: quadratic

Write a polynomial $g(x)$ in factored form that has zeros at $x = 0$, multiplicity 2, $x = -2$ and $x = 3$

Answer: $(2, 5)$

Use polynomial long division to rewri$e$ the expressio$x + $

Answer: Concave down

Calculate the average rate of change for $f(x) = x^2 + 3x$ on the interval $[1, 4]$.

$er: linear

The graph of $y = m(x)$ is a result of the transformation of f as: $m(x) = 3f(x + 4) - 6$. The point $(8, -3)$ is on the graph of f, find the point that maps to the graph of m.

Answer: $\lim_{x \to -\infty} g(x) = \infty$

If a polynomial has real coefficients and $3 - 2i$ is a zero of the function, what other value must also be a zero?

Answer: $y = 2x - 1$

Write a transformation function $g(x)$ for the function f where the graph has a horizontal translation 3 units right and a vertical translation 2 units up.

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