

Circuit Training

Name: _____

AP Precalculus Review Circuit – No Calculator!

Directions: Begin in cell #1. Show the work necessary to arrive at your answer. You may require a separate sheet of paper. Search for your answer in one of the other cells and mark that cell #2, then work out the new problem. Proceed in this manner until you complete the circuit.

1

Answer: -1

Select values of two functions are given in the table. The functions are either linear, quadratic, or exponential. Determine the y-intercept of each function and then search for their product.

x	$f(x)$	$g(x)$
1	6	6
2	24	12
3	96	20
4	384	30

Answer: $\frac{11}{2}$

Consider the functions $f(x) = \log_2(4x + 5) - \log_2 x$, and $g(x) = \log_2 x$. In the xy - coordinate plane, what are all x -coordinate(s) of the intersection(s) of the graphs of f and g ?

If there is more than one intersection, search for the product of the x -coordinates. If there is only one, search for the x -coordinate of the intersection.

Answer: 38

The function $y = \frac{x^2+5x+4}{3x^2-3}$ has a vertical asymptote at $x =$ _____, a horizontal asymptote at $y =$ _____, a hole at $x =$ _____, an x -intercept of $x =$ _____ and a y -intercept of $y =$ _____.

To advance in the circuit, find the product of the five answers.

Answer: -3

Consider the rational function, $q(x) = \frac{(x^2+2x+1)}{(1-x)}$. Find the interval (a, b) on which $q(x) \geq 0$.

To advance in the circuit, search for a .

Answer: 3

A polynomial function, p , has one real zero and two non-real zeros. The real zero is -2 and one of the non-real zeros is $-3 + 5i$. What is the other non-real zero in $a + bi$ form? _____

To advance in the circuit, find the sum of a and b for the non-real zero you found.

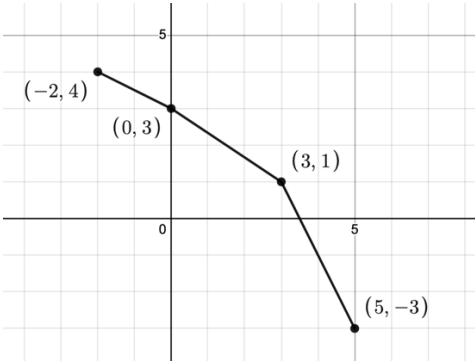
Answer: $2\sqrt{3}$

Solve the equation $\sin 2\theta = \cos \theta$ for $0 \leq \theta < 2\pi$. There are multiple answers. Check your answers with your teacher and then advance to the answer choice -1.

Answer: ∞

A polynomial function p is given by $p(x) = (x^2 - x - 2)(x^2 - 9x)$. List the zeros of the function.

To advance in the circuit, find the sum of the zeros.

<p># _____ Answer: $-\infty$</p> <p>The complex number represented by $4 \cos\left(-\frac{\pi}{6}\right) + i(4 \sin\left(-\frac{\pi}{6}\right))$ has the polar coordinates (r, θ) and the rectangular coordinates (a, b). Find both representations of the complex number and then to advance in the circuit, find the a-coordinate.</p>	<p># _____ Answer: 1</p> <p>The piecewise function, f, consisting of three line segments is shown.</p>  <p>The function, g, not pictured, is the inverse of f. What is the minimum value of g?</p>
<p># _____ Answer: 10</p> <p>Consider the function $f(x) = e^x$. As x decreases without bound, $f(x)$ tends towards _____.</p>	<p># _____ Answer: -8</p> <p>$\lim_{x \rightarrow -\infty} (-0.5x^7 + 6x^5 - 12x^4 + x) =$</p>
<p># _____ Answer: $-\frac{16}{9}$</p> <p>Let $g(x) = 6\sin^2 x + \ln \sqrt{x} + 6\cos^2 x + \tan\left(\frac{3\pi}{4e} x\right)$.</p> <p>What is $g(e)$?</p>	<p># _____ Answer: 5</p> <p>What is the period of $h(t) = 4 \sin\left(\frac{\pi}{3} t\right) + 5$?</p>
<p># _____ Answer: -2</p> <p>The expression $6 \log \sqrt[3]{x} + 5 \log \frac{1}{y}$ can be written as $\log x^a y^b$. What are the values of a and b?</p> <p>To advance in the circuit, find the sum of a and b.</p>	<p># _____ Answer: 0</p> <p>The function $g(x) = 6 \cdot 7^{2x} + 5 \cdot 49^x$ can be written in the form $g(x) = a \cdot b^x$.</p> <p>The value of a is _____ and the value of b is _____.</p> <p>To advance in the circuit, find $b - a$.</p>
<p># _____ Answer: 6</p> <p>What is the minimum value of $h(t) = 4 \sin\left(\frac{\pi}{3} t\right) + 5$?</p>	