

Given matrix $A = \begin{bmatrix} 5 & 3 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 2 \\ 1 & 3 \end{bmatrix}$. Find $A^{-1} + AB - 3(A + B) + B^2$.

ALGEBRA 2

TEAM 2

Given: $A = 523_8 + 705_8 = \underline{\hspace{2cm}}_8$

$B = 317_{10} = \underline{\hspace{2cm}}_8$

$C = 10011110_2 = \underline{\hspace{2cm}}_8$

Find $(A + B + C)_8$.

ALGEBRA 2

TEAM 3

If a general equation of a quadratic function is $f(x) = ax^2 + bx + c$, and $f(3) = 7$, $f(2) = 6$ and $f(1) = 3$. Find the value of $a + b + c$.

ALGEBRA 2

TEAM 4

Given the following:

(h, k) = Center for the equation $4x^2 + 9y^2 - 24x + 36y + 36 = 0$.

r = Radius for the equation $x^2 + y^2 - 8x + 4y + 18 = 0$.

FIND $r^2 - hk$.

ALGEBRA 2

TEAM 5

Let $A = f(2)$ where $f(x) = \frac{x^2 - 3x - 2}{\sqrt{4x - 5}}$.

Let $B = \begin{pmatrix} 7 \\ 4 \end{pmatrix} - \begin{pmatrix} 6 \\ 2 \end{pmatrix}$

Let $C = 3^{-\frac{2}{5}} (3^{\frac{2}{5}} + 3^{\frac{5}{5}})$

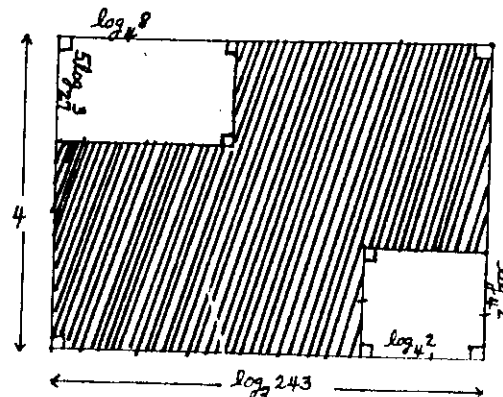
Let $D = 3i^{15} + i^{12} - 3i^3 - 2i^6$

FIND ABCD.

ALGEBRA 2

TEAM 6

Find the area of the shaded region.



ALGEBRA 2

TEAM 7

Solve for all possible values of x : $(x^2 - 1)^2 = 5 - 4(x^2 - 1)$

ALGEBRA 2

TEAM 8

Let A = Coefficient of the 4th term of the expansion $(2x - y)^9$.

Let B = Coefficient of the middle term of the expansion $(2x + y)^6$.

FIND A - B.

ALGEBRA 2

TEAM 9

Eight boys and six girls are in a class. In how many ways can four of the boys and three of the girls line up in alternate order?

ALGEBRA 2

TEAM 10

The plans for a new school building call for 42 classrooms. The classrooms and the main office are to be equipped with intercoms which will provide for communication lines between every pair of intercoms. How many communication lines will be required?

ALGEBRA 2

TEAM 11

T = Tanya's age in the following word problem.

Four years ago Tanya was 3 times as old as her daughter. Six years from now she will be twice as old as the girl. How old is Tanya now?

D = The number of dimes in the following word problem.

Regina has a collection of nickels and dimes. There are 40 coins worth \$2.90. Find the number of dimes.

Find T - D.

ALGEBRA 2

TEAM 12

Give the solution(s) for the system of equations.

$$\begin{cases} y = \frac{x^3 - 4x^2 + x + 6}{x - 2} \\ x - y = 5 \end{cases}$$

ALGEBRA 2

TEAM 13

Solve for all possible values of x :

$$3^{x+1} + 3^x = 4$$

ALGEBRA 2

TEAM 14

Let A = The number of integral divisors of 10,800.

Let B = The number of even integral divisors of 36,000.

Find $\frac{A}{B}$.

ALGEBRA 2

TEAM 15

Evaluate the following expression:

$$3 + \frac{1}{2 + \frac{1}{3 + \frac{1}{2 + \frac{1}{3 + \dots}}}}$$