

#1 Algebra – Hustle
MA@ National Convention 2026

How many integer solutions are possible for x in the inequality $|2x - 5| < 48$?

Answer : _____

Round 1 2 3 4 5

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#2 Algebra - Hustle
MAΘ National Convention 2026

Simplify:

$$\frac{(8!)(7!)}{(6!)(5!)(4!)}$$

Answer : _____

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#3 Algebra – Hustle
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Find all real values of x such that $\log_5(x^2) = 4$.

Answer : _____

Round 1 2 3 4 5

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#4 Algebra - Hustle
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$P(x)$ and $Q(x)$ are inverse functions of each other. If $P(x) = (5 + \sqrt[3]{x})^3$, what is $Q(8)$?

Answer : _____

Round 1 2 3 4 5

#4 Algebra - Hustle
MA@ National Convention 2026

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#5 Algebra – Hustle
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Given a linear function, $f(x) = mx + b$, where $f(1) = -3$ and $f(3) = 1$, what is the value of $(m + b)$?

Answer : _____

Round 1 2 3 4 5

#5 Algebra – Hustle
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Round 1 2 3 4 5

#6 Algebra - Hustle
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If A and B are real numbers such that $\frac{9x-5}{x^2-25} = \frac{A}{x-5} + \frac{B}{x+5}$ for all values of x where defined, what is $(2A) \div (3B)$?

Answer : _____

Round 1 2 3 4 5

#6 Algebra - Hustle
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If A and B are real numbers such that $\frac{9x-5}{x^2-25} = \frac{A}{x-5} + \frac{B}{x+5}$ for all values of x where defined, what is $(2A) \div (3B)$?

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Answer : _____

Round 1 2 3 4 5

#7 Algebra – Hustle
MAΘ National Convention 2026

Let $z = 10 + 24i$. What is $|z|$?

Answer : _____

Round 1 2 3 4 5

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#8 Algebra – Hustle
MA@ National Convention 2026

Find the real solutions of the equation below.

$$6^x - 27 \cdot 2^x - 4 \cdot 3^x + 108 = 0$$

Answer : _____

Round 1 2 3 4 5

#8 Algebra – Hustle
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#9 Algebra – Hustle
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Find the domain of $\log_{2x-1} \left(\frac{x-5}{x^2-4} \right)$.
Write your answer in interval notation.

Answer : _____

Round 1 2 3 4 5

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#10 Algebra – Hustle
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Jibran constructs a box with distinct dimensions equal to the roots of the equation $f(x) = x^3 - 15x^2 + 74x - 120$. Find the total surface area of the box? [Assume the box is a rectangular prism.]

Answer : _____

Round 1 2 3 4 5

#10 Algebra – Hustle
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Answer : _____

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#11 Algebra – Hustle
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How many prime numbers are less than 36?

Answer : _____

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Round 1 2 3 4 5

#12 Algebra - Hustle
MA@ National Convention 2026

Evaluate the determinant of $\begin{bmatrix} 1 & 0 & -3 \\ 2 & -1 & 2 \\ 6 & -2 & 5 \end{bmatrix}$

Answer : _____

Round 1 2 3 4 5

#12 Algebra - Hustle
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Answer : _____

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#13 Algebra – Hustle
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Find the coordinates of the center of a circle passing through the points $(-3, 1)$, $(1, 3)$, and $(-4, -2)$.

Answer : _____

Round 1 2 3 4 5

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Round 1 2 3 4 5

#14 Algebra – Hustle
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What are the coordinates of the focus of the parabola $(y + 4)^2 = 16(x + 1)$?

Answer : _____

Round 1 2 3 4 5

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#15 Algebra – Hustle
MA@ National Convention 2026

Solve for x in the equation:

$$2^{6083} - 2^{6082} + 2^{6081} - 2^{6080} = 20 \cdot 8^x$$

Answer : _____

Round 1 2 3 4 5

#15 Algebra – Hustle
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Solve for x in the equation:

$$2^{6083} - 2^{6082} + 2^{6081} - 2^{6080} = 20 \cdot 8^x$$

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#16 Algebra - Hustle
MAΘ National Convention 2026

Given: $A = \begin{bmatrix} 4 & 2 \\ 1 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 2 \\ -2 & 0 \end{bmatrix}$

Find $AB + B^{-1}A$.

Answer : _____

Round 1 2 3 4 5

#16 Algebra - Hustle
MAΘ National Convention 2026

Given: $A = \begin{bmatrix} 4 & 2 \\ 1 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 2 \\ -2 & 0 \end{bmatrix}$

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#17 Algebra – Hustle
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Identify the coordinates of the hole (removable discontinuity) in the function below:

$$y = \frac{3x^2 + 13x^2 + 2x - 8}{x^2 + 2x - 8}$$

Answer : _____

Round 1 2 3 4 5

#17 Algebra – Hustle
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#18 Algebra – Hustle
MAΘ National Convention 2026

The domain of the function below can be represented as $a < x < b$. What is the value of $a \cdot b$?

$$f(x) = \log_2 (x^2 - 3x - 10) + \log_2 (20 - x - x^2)$$

Answer : _____

Round 1 2 3 4 5

#18 Algebra – Hustle
MAΘ National Convention 2026

The domain of the function below can be represented as $a < x < b$. What is the value of $a \cdot b$?

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Round 1 2 3 4 5

#19 Algebra – Hustle
MAΘ National Convention 2026

What is the eccentricity of the conic section whose equation is

$$16x^2 + 9y^2 + 96x - 36y + 36 = 0?$$

Answer : _____

Round 1 2 3 4 5

#19 Algebra – Hustle
MAΘ National Convention 2026

What is the eccentricity of the conic section whose equation is

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Round 1 2 3 4 5

#20 Algebra – Hustle
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Given a geometric series with common ratio $r = 2/3$, the sum of the first four terms of the series is 260. Find the fourth term of the series.

Answer : _____

Round 1 2 3 4 5

#20 Algebra – Hustle
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Given a geometric series with common ratio $r = 2/3$, the sum of the first four terms of the series is 260. Find the fourth term of the series.

Answer : _____

Round 1 2 3 4 5

#20 Algebra – Hustle
MA@ National Convention 2026

Given a geometric series with common ratio $r = 2/3$, the sum of the first four terms of the series is 260. Find the fourth term of the series.

Answer : _____

Round 1 2 3 4 5

#20 Algebra – Hustle
MA@ National Convention 2026

Given a geometric series with common ratio $r = 2/3$, the sum of the first four terms of the series is 260. Find the fourth term of the series.

Answer : _____

Round 1 2 3 4 5

#21 Algebra – Hustle
MA@ National Convention 2026

Find the product of the complex conjugates of
 $Z_A = 5 + 2i$ and $Z_B = -2 + 4i$.

Answer : _____

Round 1 2 3 4 5

#21 Algebra – Hustle
MA@ National Convention 2026

Find the product of the complex conjugates of
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Round 1 2 3 4 5

#21 Algebra – Hustle
MA@ National Convention 2026

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Answer : _____

Round 1 2 3 4 5

#21 Algebra – Hustle
MA@ National Convention 2026

Find the product of the complex conjugates of
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Answer : _____

Round 1 2 3 4 5

#22 Algebra - Hustle
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If $g(x) = e^{x-1} - 5$, find $g^{-1}(x)$.

Answer : _____

Round 1 2 3 4 5

#22 Algebra - Hustle
MAΘ National Convention 2026

If $g(x) = e^{x-1} - 5$, find $g^{-1}(x)$.

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Round 1 2 3 4 5

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MAΘ National Convention 2026

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Round 1 2 3 4 5

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MAΘ National Convention 2026

If $g(x) = e^{x-1} - 5$, find $g^{-1}(x)$.

Answer : _____

Round 1 2 3 4 5

#23 Algebra – Hustle
MA@ National Convention 2026

Solve for x:

$$\frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{4-x}{x}$$

Answer : _____

Round 1 2 3 4 5

#23 Algebra – Hustle
MA@ National Convention 2026

Solve for x:

$$\frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{4-x}{x}$$

Answer : _____

Round 1 2 3 4 5

#23 Algebra – Hustle
MA@ National Convention 2026

Solve for x:

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Answer : _____

Round 1 2 3 4 5

#23 Algebra – Hustle
MA@ National Convention 2026

Solve for x:

$$\frac{3}{x+2} + \frac{6}{x^2+2x} = \frac{4-x}{x}$$

Answer : _____

Round 1 2 3 4 5

#24 Algebra – Hustle
MAΘ National Convention 2026

$$f(x) = x^2 - 3x + 2 \text{ and } g(x) = 4x - 5$$

Find the value of $f(g(0)) + g(f(0))$.

Answer : _____

Round 1 2 3 4 5

#24 Algebra – Hustle
MAΘ National Convention 2026

$$f(x) = x^2 - 3x + 2 \text{ and } g(x) = 4x - 5$$

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Answer : _____

Round 1 2 3 4 5

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Find the value of $f(g(0)) + g(f(0))$.

Answer : _____

Round 1 2 3 4 5

#25 Algebra – Hustle
MA@ National Convention 2026

Given that $\log_7 5 = A$, $\log_7 3 = B$, and $\log_7 2 = C$,
express the value of $\log_7 \left(\frac{25}{12} \right)$ in terms of
 A , B , and C .

Answer : _____

Round 1 2 3 4 5

#25 Algebra – Hustle
MA@ National Convention 2026

Given that $\log_7 5 = A$, $\log_7 3 = B$, and $\log_7 2 = C$,
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