



Math Tutoring AI

Top 10 ACT Math Questions Most Students Miss — With Solutions

1. Complex Numbers

Compute i^3 .

Solution: $i^2 = -1 \rightarrow i^3 = -i$.

2. Trigonometry

Right triangle opposite = 3, hypotenuse = 5. Find $\sin \theta$.

Solution: $\sin \theta = 3/5$.

3. Logarithmic Equation

Solve $\log_2(x - 1) + \log_2(x - 3) = 3$.

Solution: Combine logs: $\log_2[(x - 1)(x - 3)] = 3 \rightarrow (x - 1)(x - 3) = 2^3 = 8 \rightarrow x^2 - 4x - 5 = 0 \rightarrow x = 5$ (valid).

4. Probability

Two fair dice are rolled. Find the probability the sum is 8.

Solution: Favorable outcomes = 5; total = 36 $\rightarrow 5/36$.

5. Rational Equation

Solve $1/x + 1/(x + 1) = 3/2$.

Solution: Multiply through by $2x(x+1)$: $2(x + 1) + 2x = 3x(x + 1) \rightarrow 3x^2 - x - 2 = 0 \rightarrow x = 1$ or $x = -2/3$.

6. Matrix System

Solve $x + y = 5$, $x - y = 1$.

Solution: $x = 3$, $y = 2$.

7. Conic Section

$x^2 + y^2 = 25$ represents what conic?

Solution: Circle with radius 5.

8. Function Shift

Describe the shift of $y = (x - 2)^2$.

Solution: Shift right 2 units.

9. Combinatorics

How many ways to choose 2 from 5?

Solution: $C(5,2) = 10$.

10. Domain

Find the domain of $1/(x - 4)$.

Solution: $x \neq 4$.