

Math Bowl Round 2

Problem 1: What is the indefinite integral of $\frac{6}{x}$?

Ans: $6 \ln |x| + C$ (must include absolute value and plus C)

Problem 2: What is the volume of a right cone with height h and base radius r ?

Ans: $\frac{1}{3}\pi r^2 h$

Problem 3: What is binary 10010 as a decimal number?

Ans: 18

Problem 4: What is the limit as n approaches infinity of $\frac{2x}{3x+4545}$?

Ans: $\frac{2}{3}$

Problem 5: What is the dot product of the two vectors $\langle 1, 4, -1 \rangle$ and $\langle 5, 12, 1 \rangle$?

Ans: 52

Problem 6: What is $5^2 + 6^2 + 12$?

Ans: 73

Problem 7: What is the amplitude of $-34\sin(72x)$?

Ans: 34 (must be positive)

Problem 8: If $y = 3x^2 + 6x + 12345$, then what is the derivative of y evaluated at 10?

Ans: 66

Problem 9: What is the Cartesian equation of a circle with radius 4, centered at (3,6).

Ans: $(x - 3)^2 + (y - 6)^2 = 16$

Problem 10: If the set $A = \{2, 5, 10, 17, 6\}$ and $B = \{5, 13, 43, 6, 10\}$ what is the intersection of A and B ?

Ans: $\{5, 6, 10\}$

Tie-Breaker 1: What is the sum of the first 12 integers?

Ans: 78

Only use if no one gets the first tiebreaker

Tie-Breaker 2: What is $e^{2\pi i}$?

Ans: 1