

Math Bowl Round 4

Problem 1: If log base 10 of 2 is 0.301, what is log base 10 of 32?

Ans: 1.505

Problem 2: In what number base does $01 + 05 = 10$?

Ans: 6

Problem 3: A particle's position is defined by the equation $x(t) = 2t^3 - 15t^2 + 24t - 60$. At what times, t , is the particle at rest?

Ans: $t = 1$ and 4

Problem 4: In what quadrants does the graph of the equation $y = -2x - 4$ lie?

Ans: II, III, IV

Problem 5: What is the integral from 0 to 2 of x^2 ?

Ans: $8/3$

Problem 6: What is the sum of an infinite geometric series with a ratio of $-2/3$, and a first term of 12?

Ans: $36/5$

Problem 7: A fair coin is flipped 3 times, what is the probability you get at least one heads?

Ans: $7/8$

Problem 8: Suppose a binary operator $*$ (star) exists such that $a * b = a^3 + b^2$. What is $4 * (1 * 2)$?

Ans: 89

Problem 9: What is the $\tan(72\pi)$?

Ans: 0

Problem 10: Who was the pioneer of differential geometry and also contributed to numerical integration approximations?

Ans: Bernhard Riemann

Tiebreaker 1: What is $10^{12} \bmod 12$?

Ans: 4

Only use if no one gets the first tiebreaker

Tiebreaker 2: What is $13^2 - 13$?

Ans: 156