

Math Bowl Round 6

Question 1: What is 7 choose 4?

Ans: 35

Question 2: What is the area of a triangle with side lengths 3, 12, 13

Ans: $\sqrt{308}$

Question 3: A point inside of a circle of radius 10 is picked at random. What is the probability it lies outside of a concentric circle of radius 6?

Ans: .64 or 64%

Question 4: What is the least common multiple of 13 and 16?

Ans: 208

Question 5: What is 2^{2^2} ?

Ans: 16

Question 6: What is i^{242} ?

Ans: -1

Question 7: For what values of p does the infinite series of $1/n^p$ converge?

Ans: $p > 1$

Question 8: A die is rolled twice, what is the probability you roll at least one 2?

Ans: 11/36

Question 9: What field of mathematics deals with the deformation of surfaces and space under transformations like twisting and stretching but not tearing?

Ans: Topology

Question 10: What is the solution, $y(x)$, to the differential equation $dy/dx = yx^2$?

Ans: $Ce^{(x^3 / 3)}$

Also accept $e^{(x^3/3+C)}$

Tiebreaker: Don't let your Internet Service Provider fool you! You are measured in megabits/sec and not megabytes. With that, how many bits are in two bytes?

Ans: 16 bits

Only use if no one gets the first tiebreaker

Tiebreaker 2: What is $7^2 / 28^2$?

Ans: 1/16