

Lecture 9: Quiz

Name:

Problem 1

Which problem is the first problem in graph theory?

- a) The Koenigsberg bridge problem
 b) Finding the Euler characteristic of a polyhedron
 c) The Petersburg paradox.
 a) The Poincaré conjecture

Problem 2

Which of the following letters are topologically equivalent to the letter J ?

- a) O
 b) A
 c) S
 d) Q

Problem 3

How many regular Platonic solids are there in three dimensions?

- a) 3
 b) 4
 c) 12
 d) 5

Problem 4

Which formula is called Euler's Gem?

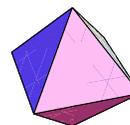
- a) $E - F + V = 2$
 b) $E - V + F = 0$
 c) $E - V + F = 2$
 d) $V - E + F = 2$

Problem 5

Which mathematician first established how many Platonic solids there are in three dimensions?

- a) Erasthathenes
 b) Theaetetus
 c) Plato
 d) Euler

Problem 6



Which Platonic solid is displayed in the picture?

- a) Tetrahedron
 b) Cube
 c) Icosahedron
 d) Octahedron

Problem 7

How many different semiregular nonprismatic polyhedra are there in space?

- a) 5
 b) 12
 c) 24
 d) 13

Problem 8

Which of the following surfaces are orientable?

- a) The torus
 b) Sphere
 c) The cone
 d) Klein bottle

Problem 9

The analogue of polyhedra in higher dimensions are called polytopes. How many regular polyhedra are there in 4 dimensions?

- a) 3
 b) 4
 c) 5
 d) 6

Problem 10

What is the Euler characteristic of the sphere?

- a) 2
 b) 0
 c) 1
 d) -1