Lecture 9: Quiz

Name:

Problem 1

Which of the following letters are connected?

a) j
b) s
c) g
d) l

Problem 2

Which of the integer digits from 0 to 9 is topologically equivalent to the letter B?

Problem 3

Which problem triggered the development of graph theory?

a) Calculus, the study of graphs $y = f(x)$.
b) Finding the Euler characteristic of a polyhedron
c) The Koenigsberg bridge problem
d) Fermat's problem

Problem 4

How many regular Platonic solids are there in 11 dimensions?

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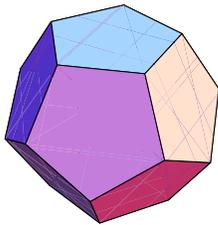c) 3
d) 5

Problem 5

Which formula is called Euler's Gem?

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

Problem 6

Which two mathematicians established first that there are 6 platonic solids in four dimensions?

a) Alicia Boole Stott
b) Erasthothenes
c) Theaetetus
d) Ludwig Schlaefli

Problem 7

Which Platonic solid is displayed in the picture?

a) Tetrahedron
b) Dodecahedron
c) Octahedron
d) Icosahedron

Problem 8

We have seen the Catalan solids, which are the duals of the Archimedean solids. How many different Catalan solids are there?

a) 5
b) 6
c) 24
d) 13

Problem 9

Which of the following surfaces was used by Escher in a picture showing ants?

a) The torus
b) Sphere
c) Moebius Strip
d) Klein bottle

Problem 10

Which formula was used in the proof that there are exactly 5 platonic solids?

a) $1/m + 1/n = 1/2 + 1/e$
b) $a^2 + b^2 = c^2$
c) The number of edges is always even.
d) The duality switching faces and vertices