Lecture 9: Quiz

Name: 

Problem 1
Which problem is the first problem in graph theory?

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

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) Erasthothenes  
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