MATH 3012-QHS: Applied Combinatorics
Fall 2020
Quiz 1

Name: _____

True–False:

1. $P(10, 4) = 720$
2. $C(10, 4) = 120$
3. Any connected graph with an even number of edges has an Euler circuit.
4. There is a connected graph with 500 vertices and 5000 edges which does not have a Hamiltonian cycle.
5. The number of lattice paths from $(0, 0)$ to $(12, 12)$ which pass through $(6, 8)$ is $C(12, 6)C(12, 8)$
6. If G is a graph and $\chi(G) = 3$, then $\omega(G) = 3$
7. If G is a graph on 20 vertices and every vertex has a least 12 neighbors, then G has a Hamiltonian cycle
8. The number of lattice paths from (0,0) to (12,12) which do not go above the diagonal is the Catalan number $\frac{C(12,6)}{7}$
9. $\log n = O(\sqrt{n})$
10. $\log n = o(\sqrt{n})$