HW 1   Your Name goes here

Due: Wed, 25 Jan 2023

1.1.16. Determine whether the two graphs below are isomorphic.

Key from text:
(−) = easier,
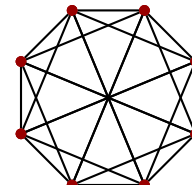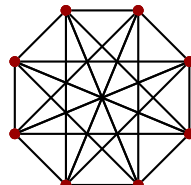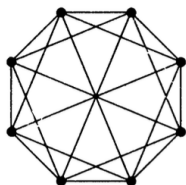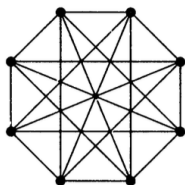(+) = harder,
(!) = useful or instructive,
(*) = uses optional material

Figure 1: Import screenshots

Figure 2: Create images with tikz

Solution:..
Put your solution here. It doesn't have to be blue ☺. You can also choose your delimeter: ♠ = "it is what it is", ♡ = "I love it", ♣ = "it beat me up", ♢ = "it's a gem". Note that they are not mutually exclusive.   ♠♡♣♢

1.1.22. (!) Determine which pairs of graphs below are iosomorphic, presenting the proof by testing the smallest number of pairs.

1.1.23. In each class below, determine the smallest n such that there exist nonisomorphic n-vertex graphs having the same vertex degree sequence.

         (a) all graphs,   (b) loopless graphs,   (c) simple graphs

1.1.25. (!) Prove the Petersen graph has no cycle of length 7.

1.1.33. For $n = 5$, $n = 7$, and $n = 9$, decompose K_n into copies of C_n.

1.1.35. (!) Prove that K_n decomposes into three pairwise-isomorphic subgraphs if and only if $n+1$ is not divisible by 3. (Hint: For the case where n is divisible by 3, split the vertices into three sets of equal size.)

1.1.38. (!) Let G be a simple graph in which every vertex has degree 3. Prove that G decomposes into claws if and only if G is bipartite.