Graph Theory 1, MATH 5340, Fall 2020

Homework 5, 1.5. Directed Graphs and 1.6. Infinite Graphs, Solutions

Due Sunday, September 27, at noon

Write in complete sentences!!! *Explain* what you are doing and convince me that you understand what you are doing and why. Justify all steps by quoting relevant results from the textbook, class notes, or hypotheses. Do not copy the work of others; **do your own work!!!**

1.5.4. (a) Define the notions of vertex-transitivity and arc-transitivity for digraphs.

1.5.4. (b)(i) Prove that every vertex-transitive digraph is diregular.

1.5.5. A digraph is *self-converse* if it is isomorphic to its converse. Show that both digraphs in Figure 1.26 are self-converse. Notice that Bondy and Murty adopt the "convention" of representing two oppositely oriented arcs by an edge (ugh!).

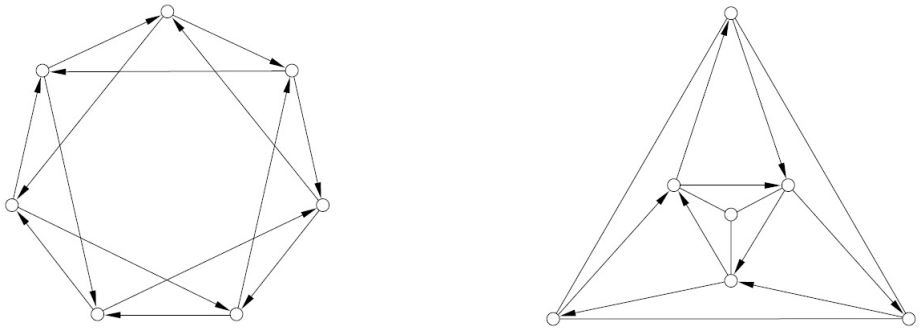

Figure 1.26

1.6.3. Give an example of a self-complementary infinite (simple) graph.