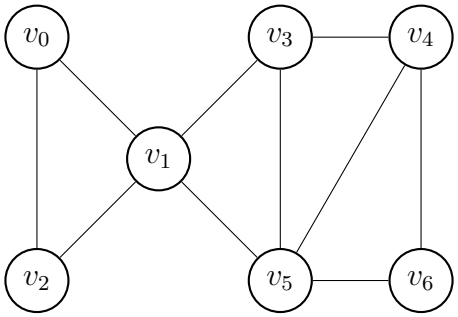
CS-472: Design Technologies for Integrated Systems

Exercise Problem Set 1 Date: 11/09/2025

Problem 1

Given the graph $G(V, E)$ below:



(a) Color the graph with the smallest number of colors.

(b) Show a minimum clique cover.

(c) Show a minimum clique partition.

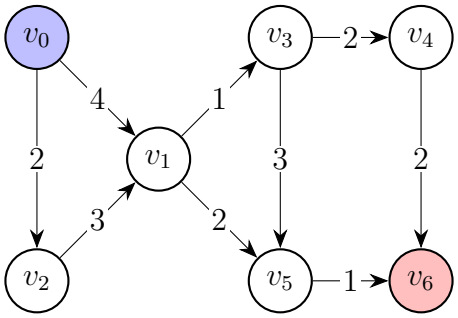
(d) Is G a *perfect graph*? Why or why not?

(e) Draw the complement graph.

(f) Color the complement graph with the smallest number of colors.

Problem 2

Given the directed acyclic graph $G(V, E, W)$ below:



Find the shortest path from the *source* v_0 to the *sink* v_6 by applying the following algorithms:

(a) Dijkstra algorithm.

(b) Bellman-Ford algorithm.