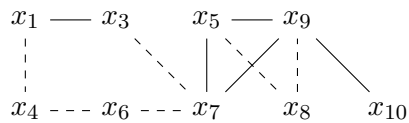
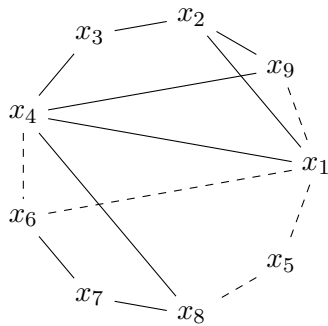


- 1 (a) The formula is satisfiable since the equality graph has no (simple) contradictory cycles:

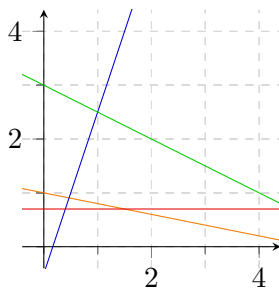


- (b) The formula is unsatisfiable as the equality graph contains simple contradictory cycles:

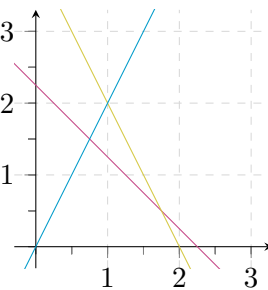


There are 5 of them:

- $x_4 \text{ --- } x_6 \text{ --- } x_7 \text{ --- } x_8 \text{ --- } x_4$
- $x_1 \text{ --- } x_4 \text{ --- } x_8 \text{ --- } x_7 \text{ --- } x_6 \text{ --- } x_1$
- $x_1 \text{ --- } x_2 \text{ --- } x_9 \text{ --- } x_1$
- $x_1 \text{ --- } x_4 \text{ --- } x_9 \text{ --- } x_1$
- $x_1 \text{ --- } x_2 \text{ --- } x_3 \text{ --- } x_4 \text{ --- } x_9 \text{ --- } x_1$

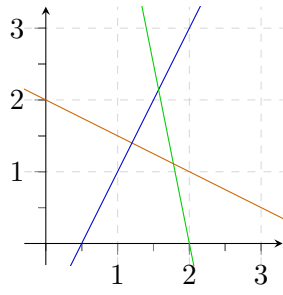


(A)

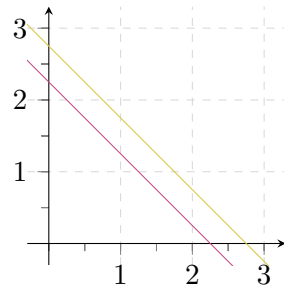


(B)

2



(C)



(D)

3 See the file `loanly_officers.py`.