Tay Wei Yong 34601066 Thursday 10am - 12pm

i) 3

$V_3 \to V_6 \to V_5 \to V_4$

$V_3 \to V_6 \to V_1 \to V_4$

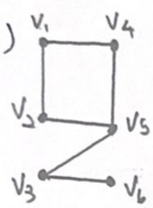
$V_3 \to V_6 \to V_2 \to V_4$

ii) 0

$\therefore$ There is only 9 edges in the graph, so its imposseble to have length of 10 's trail.

iii) edge (V_1, V_5) and edge (V_2, V_3)

2) i)



ii) 42

iii) $36+42+24+42+66+6$

$= 216$

(iv) Yes, G is bipartite

$A: \{V_1, V_5, V_6\}$

$B: \{V_2, V_3, V_4\}$

v) 0.

$\therefore$ From the graph, we can conclude that the valid walks of V_3 to V_6 is always odd

All possible walks from V_3 to V_6 :

$V_3 \to V_6$, length $=1$, odd

$V_3 \to$ to any vertices $\to V_3 \to V_6$, will always be odd as the edges repeated need to multiply by 2. Then even+1 = odd.

~~to~~ and going back the same route

For example, $V_3 \to V_5 \to V_2 \to V_3 \to V_6$

$(2 \times 2)+1 = 5$

go through loop, $V_3 \to V_5 \to V_4 \to V_2 \to V_1 \to V_5 \to V_3 \to V_6 = 7$, odd.

repeat V_3 to V_6, $V_3 \to V_6 \to V_3 \to V_6 = 3$, odd

and 300 is even. Hence, there is no walks of length 300 from V_3 to V_6

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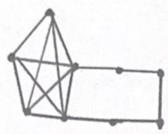
3i) 7edges

ii) number of edges in complete graph of 5 vertices:

$$^5C_2 = \frac{5\times4}{2}$$

$$= 10$$

$10 + 5 = 15$ edges



iii) least possible edges $= n+1$