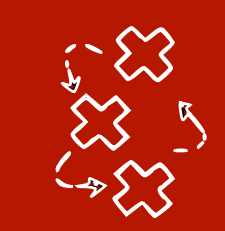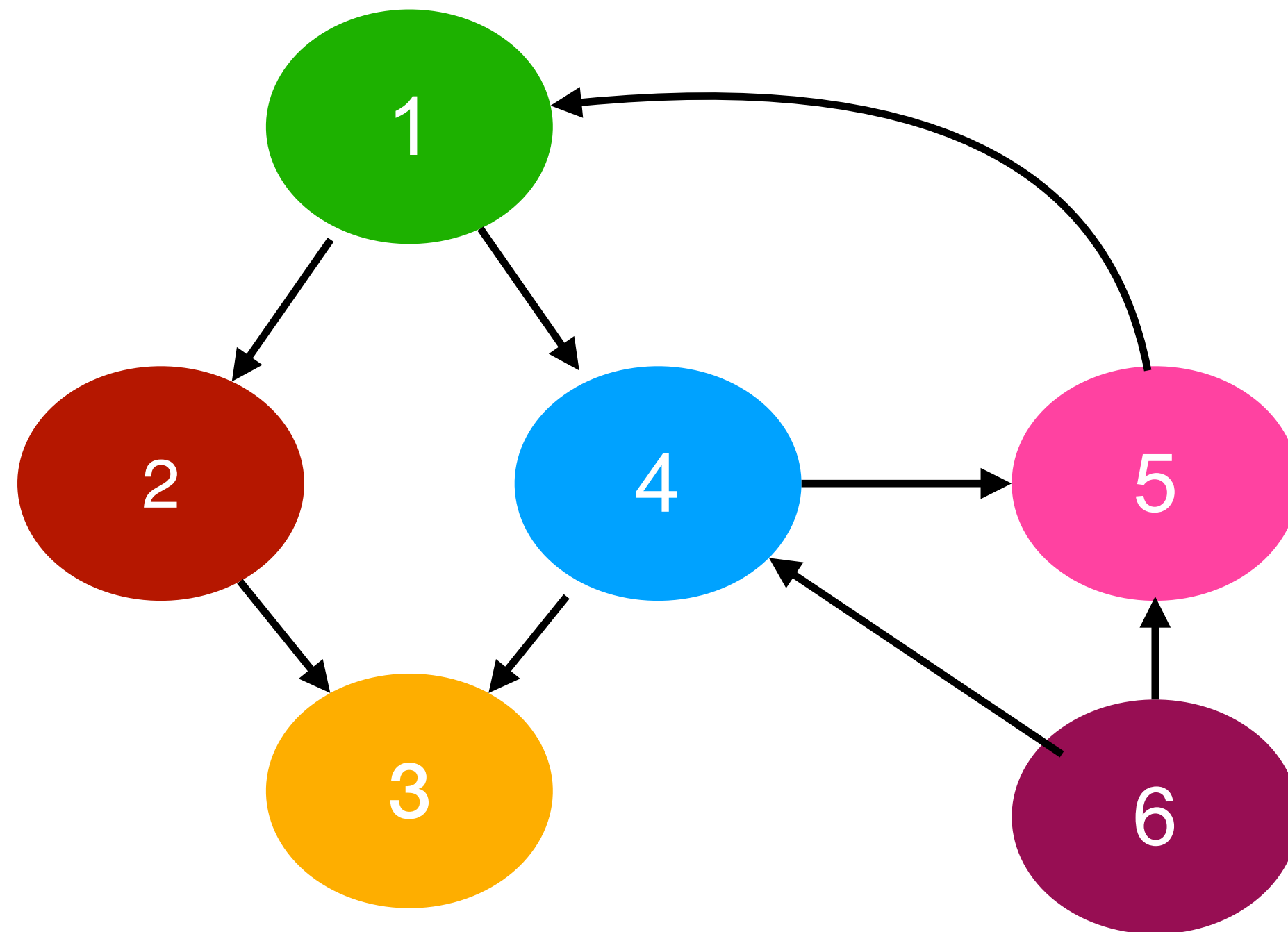# Causal Data Science

Lecture 4:0 Solutions to last lecture quizzes

Lecturer: Sara Magliacane
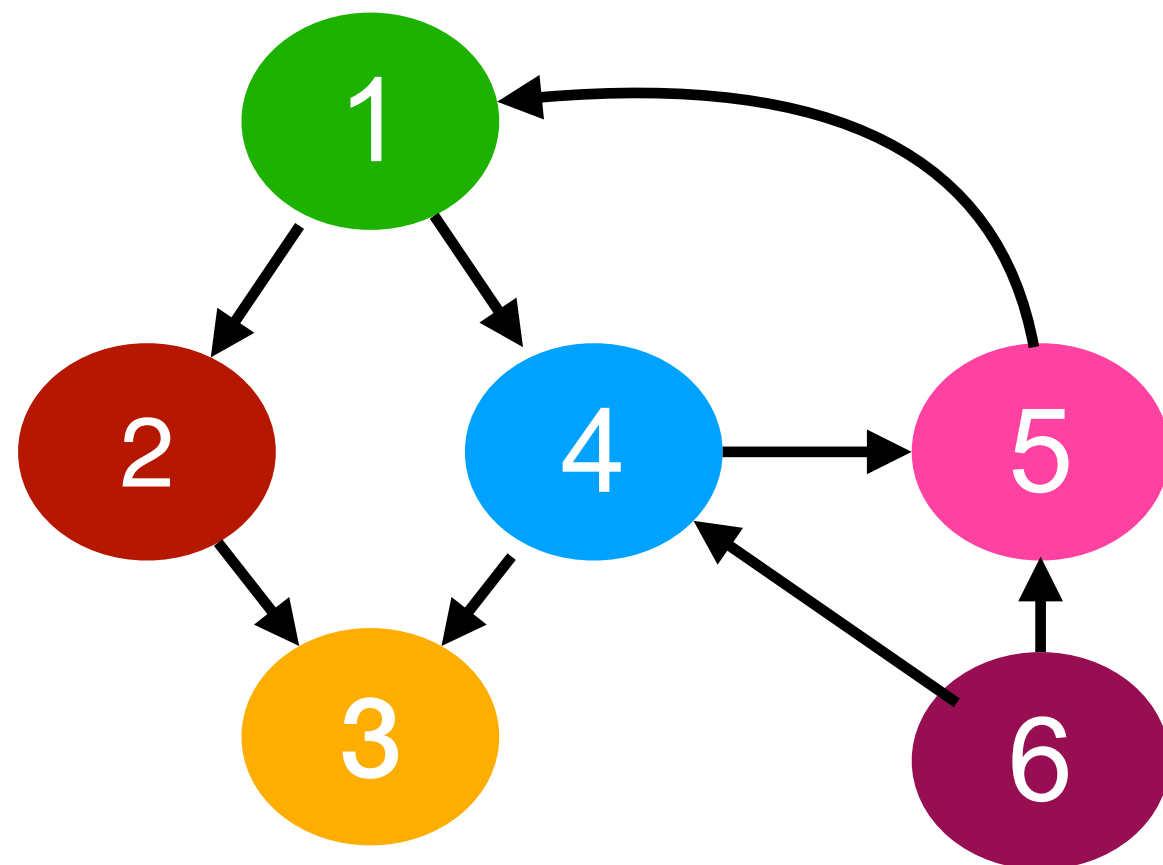
UvA - Spring 2023

Exercise in Canvas: graph terminology

Exercise in Canvas: graph terminology

1   Multiple choice   0.5 points

What is the sequence of nodes (2,4,6)?

- ○ A directed path
- ○ A path, but not directed
- ● Not a path

2   Multiple choice   0.5 points

What is the sequence of nodes (6,5,1)?

- ○ Not a path
- ● A directed path
- ○ A path but not directed
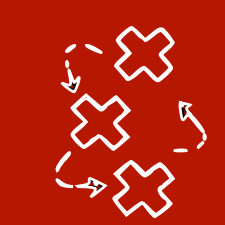
3   Multiple choice   0.5 points

What is the sequence of nodes (2,3,4,3)?

- ● Not a path
- ○ A directed path
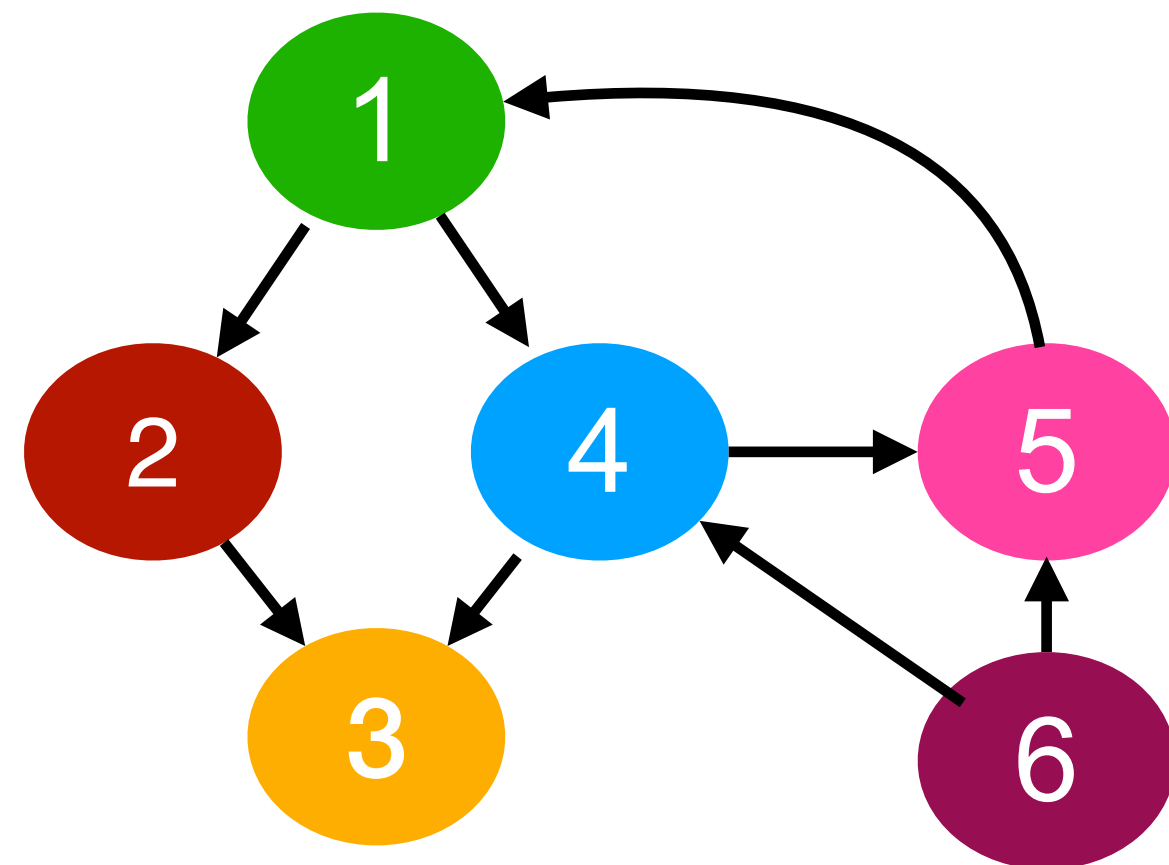- ○ A path, but not directed

4   Multiple choice   0.5 points

What is the sequence of node (1,4,6,5)?

- ● A path, but not directed
- ○ A directed path
- ○ Not a path

Exercise in Canvas: graph terminology
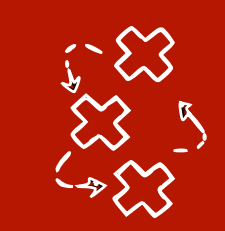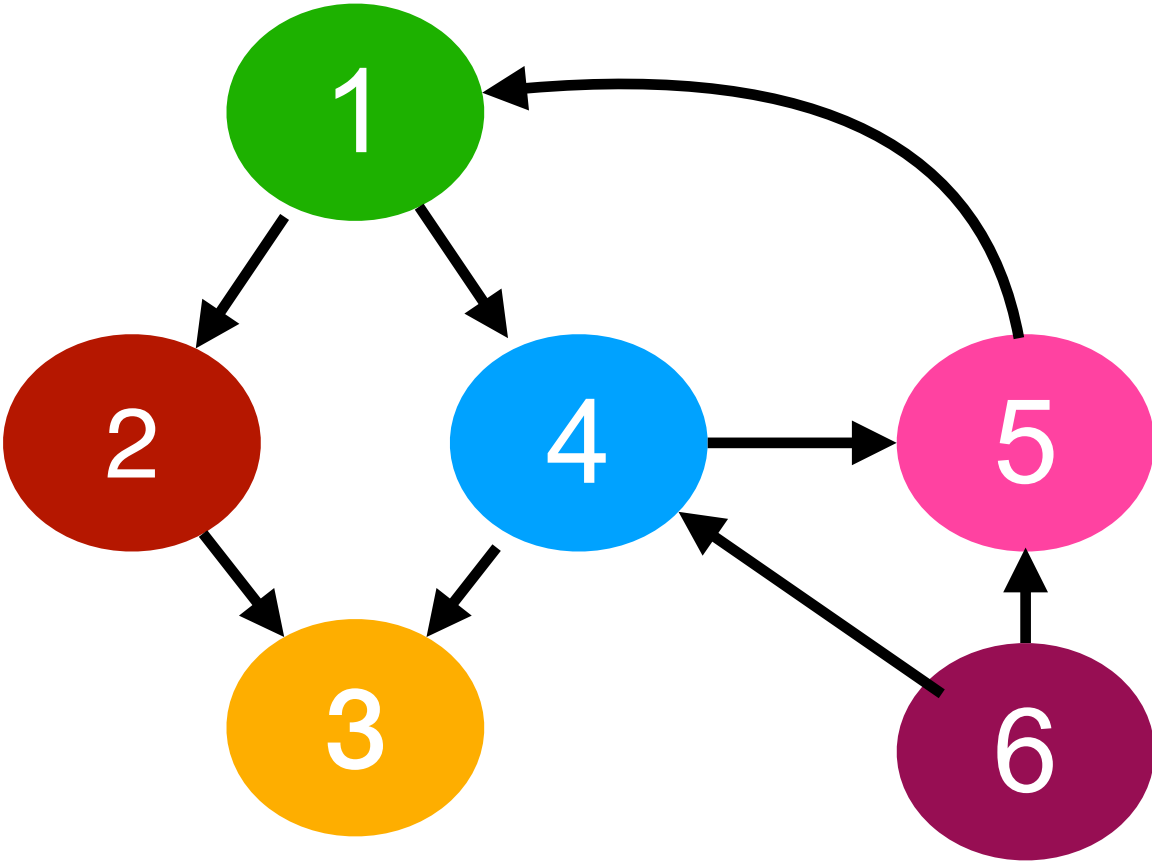
Exercise in Canvas: graph terminology

6 Multiple answer 0.5 points

Which nodes are the parents of node 4? (select all that apply)

☑ 1
☐ 2
☐ 3
☐ 4
☐ 5
☑ 6

7 Multiple answer 0.5 points

Which nodes are the children of node 6? (select all that apply)

☐ 1
☐ 2
☐ 3
☑ 4
☑ 5
☐ 6

8 Multiple answer 0.5 points

Which nodes are the descendants of node 6? (select all that apply)

☑ 1
☑ 2
☑ 3
☑ 4
☑ 5
☑ 6

9 Multiple answer 0.5 points

Which nodes are the ancestors of node 2? (select all that apply) |

☑ 1
☑ 2
☐ 3
☑ 4
☑ 5
☑ 6

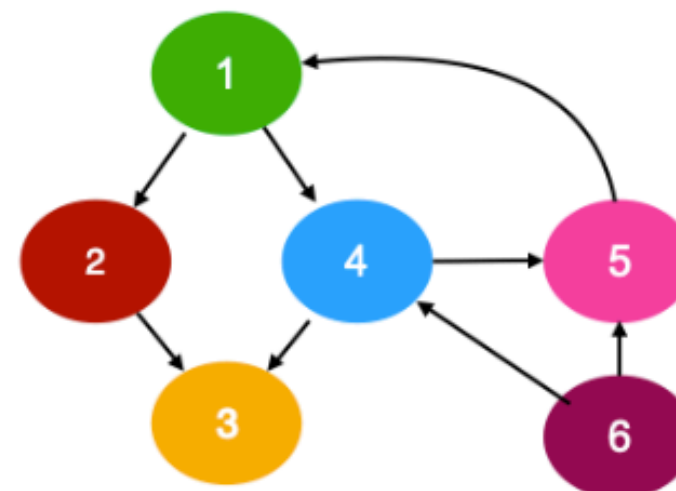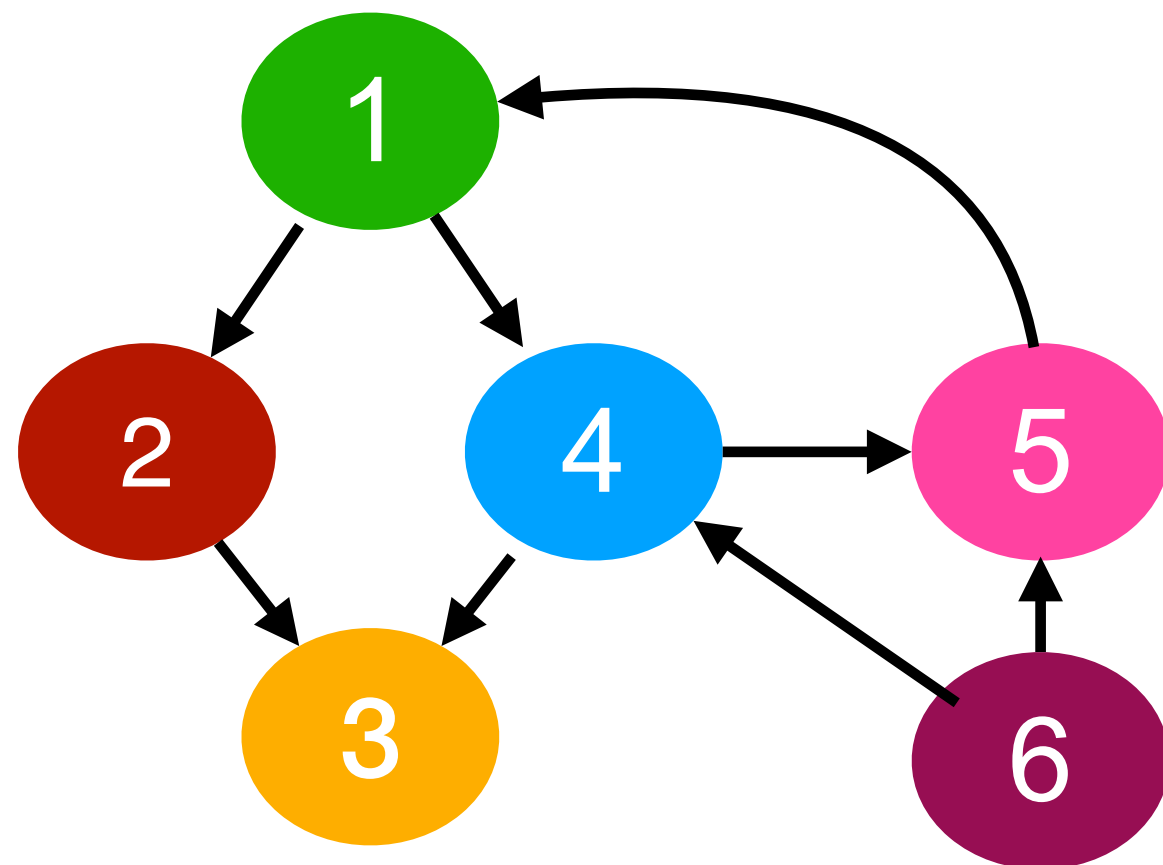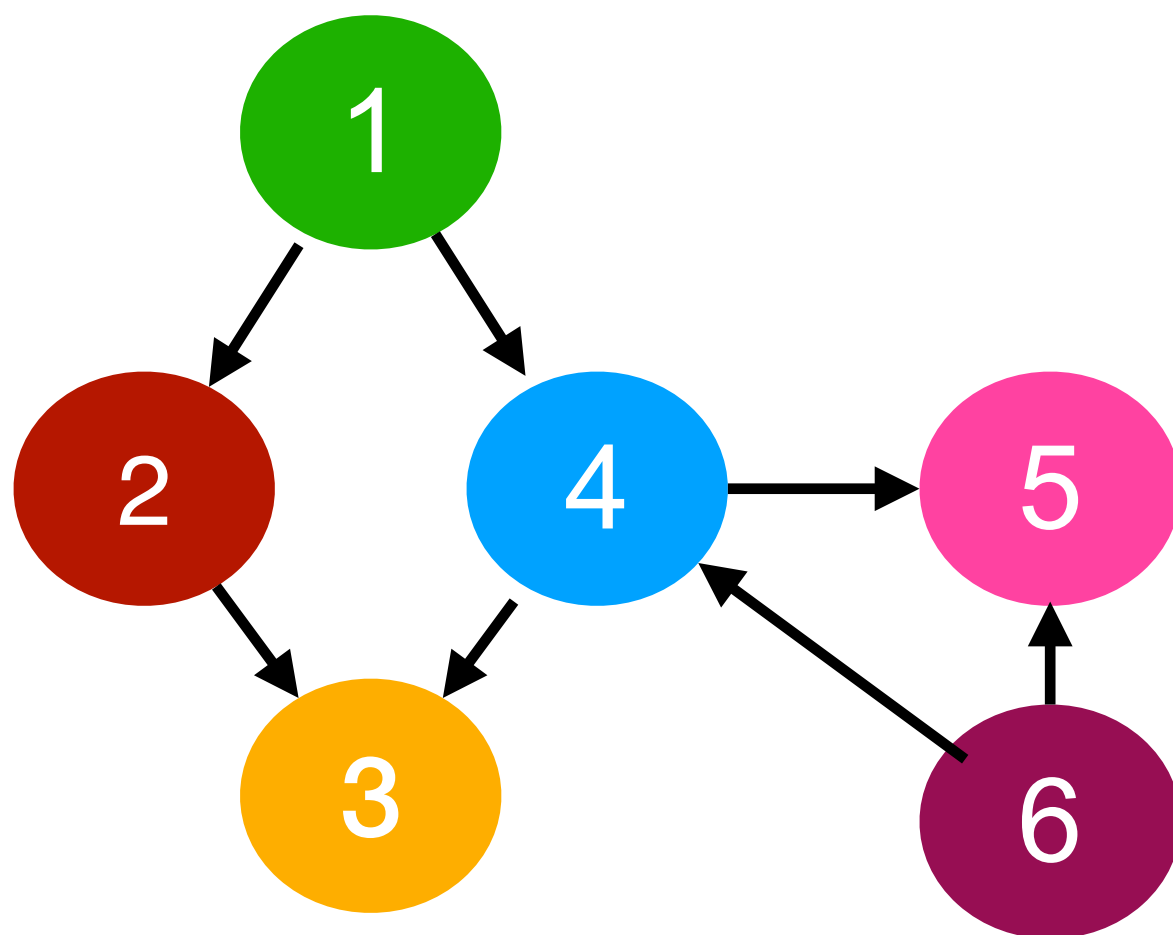# Exercise in Canvas: graph terminology

Exercise 2 in Canvas: d-separation

1 Multiple choice   0.5 points   Colliders

If 4 a collider in the graph?

- ● Trick question
- ○ Yes
- ○ No

2 Multiple choice   0.5 points   Colliders on a path

Is 4 a collider on the path 1, 4, 6, 5? What about on path 3, 4, 5?

- ○ It's a collider on both
- ○ It's not a collider on neither
- ● Only on path 1,4,6,5
- ○ Only on path 3,4,5

3 True or False   0.5 points   Blocked paths
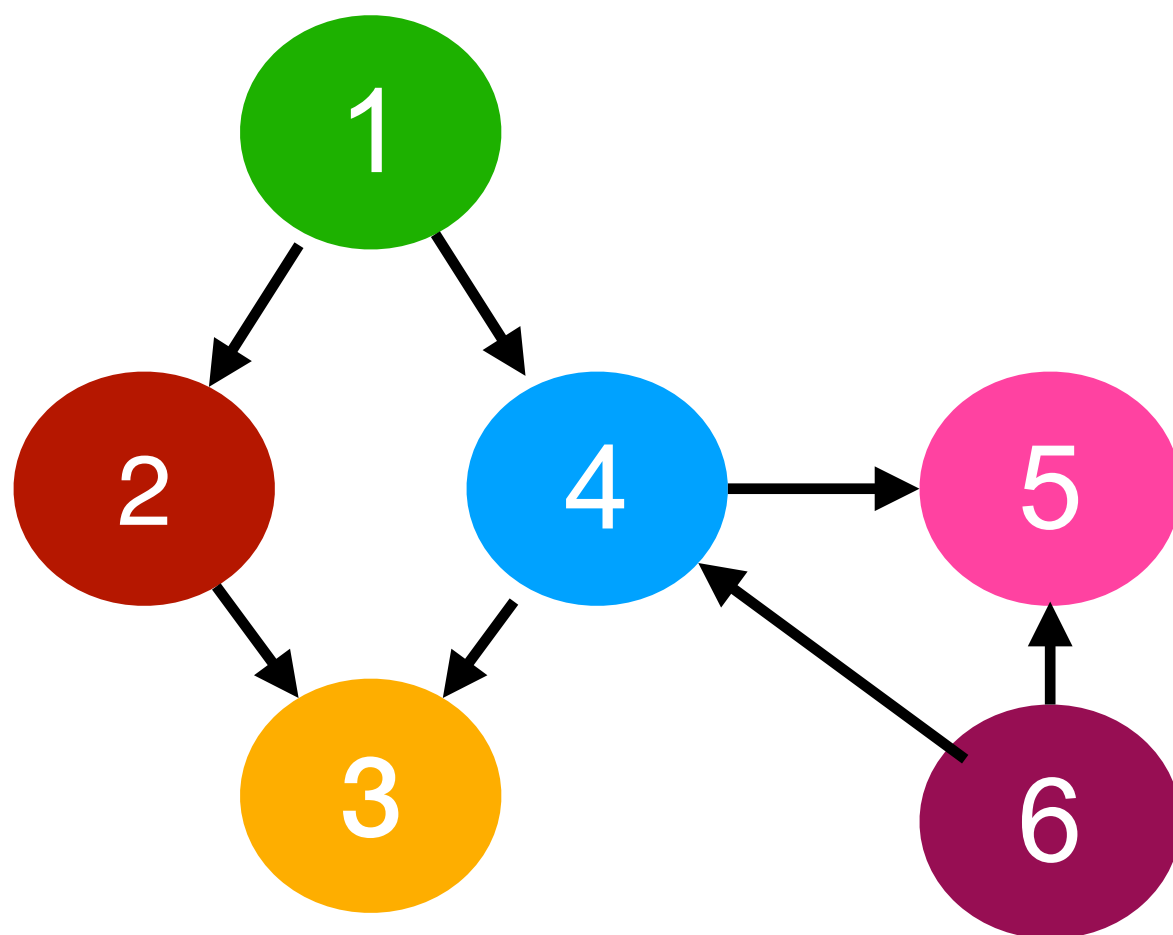
Path 1,4,5 between 1 and 5 is blocked by A = {4}

- ● True
- ○ False

4 True or False   0.5 points   Blocked paths

Path 1,4,6 between 1 and 6 is blocked by A={4}

- ○ True
- ● False

Exercise 2 in Canvas: d-separation

5 True or False   0.5 points   Blocked paths

Path 1,4,6 between 1 and 6 is blocked by **A={5}**

○ True

● False

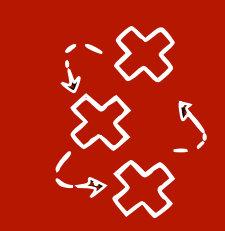**6** Multiple choice   0.5 points   D-separation

1 is d-separated from 6 when we consider **A** ...

● **A = {} (empty set)**

○ **A = {4}**

○ **A = {5}**

○ **A = {2,3}**

7 Multiple choice   1 point

1 is d-separated from 3 when we consider **A**...

○ **A={2}**

○ **A={4}**

● **A={2,4}**

○ **A={}**

Optional exercise in Canvas: d-separation 2

Optional exercise in Canvas: d-separation 2

Optional exercise in Canvas: d-separation 2

1 True or False   0 points

Is the path from 1 to 9 through 1,4,5,9 blocked when **A**= {2,5,7}?
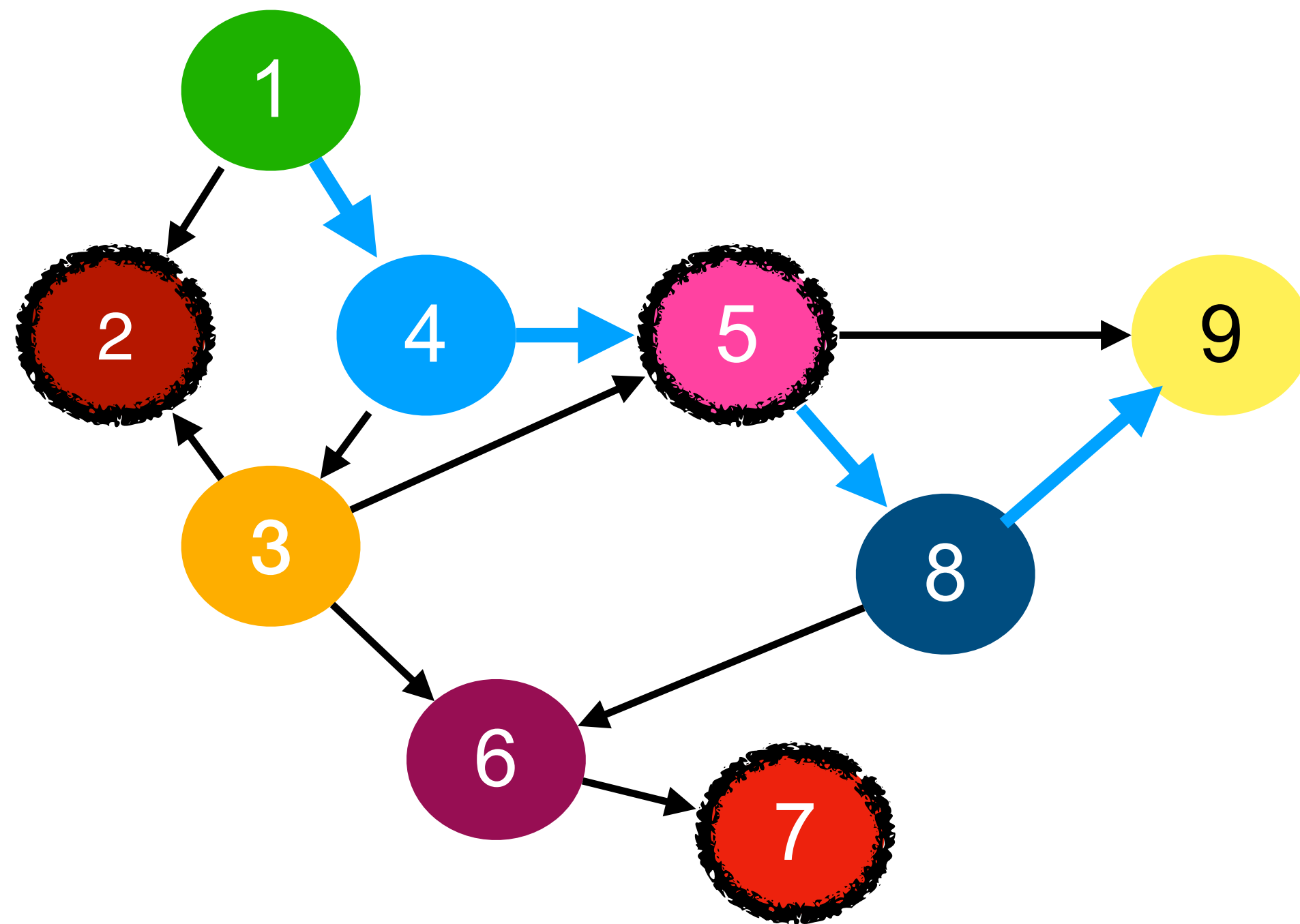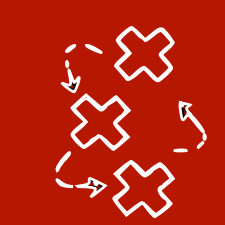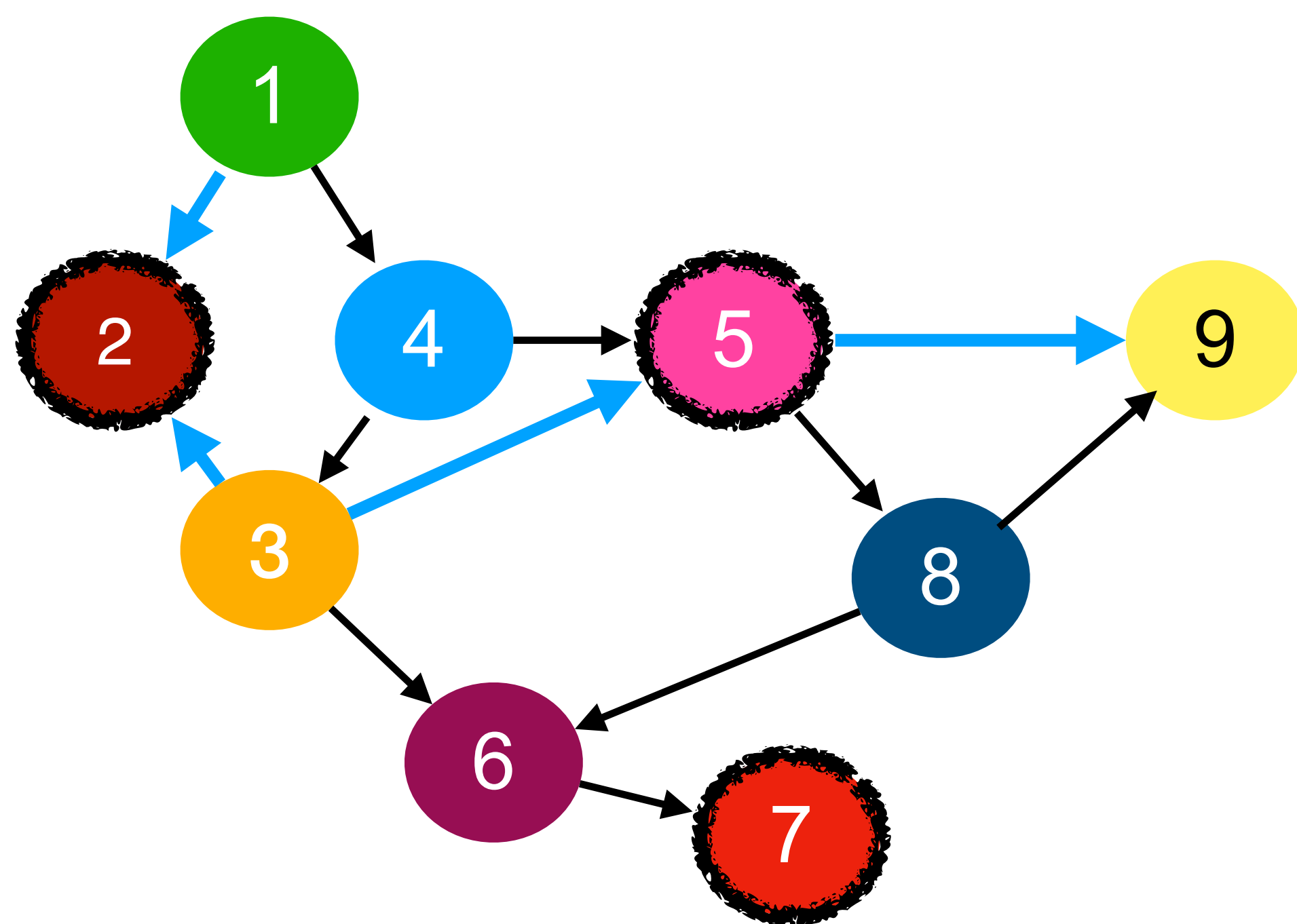
- ⦿ True
- ◯ False

2 True or False   0 points

Is the path from 1 to 9 through 1,4,5,8,9 blocked when **A**= {2,5,7}

- ⦿ True
- ◯ False

Optional exercise in Canvas: d-separation 2

1 True or False   0 points

Is the path from 1 to 9 through 1,4,5,9 blocked when **A**= {2,5,7}?
- ● True
- ○ False

2 True or False   0 points

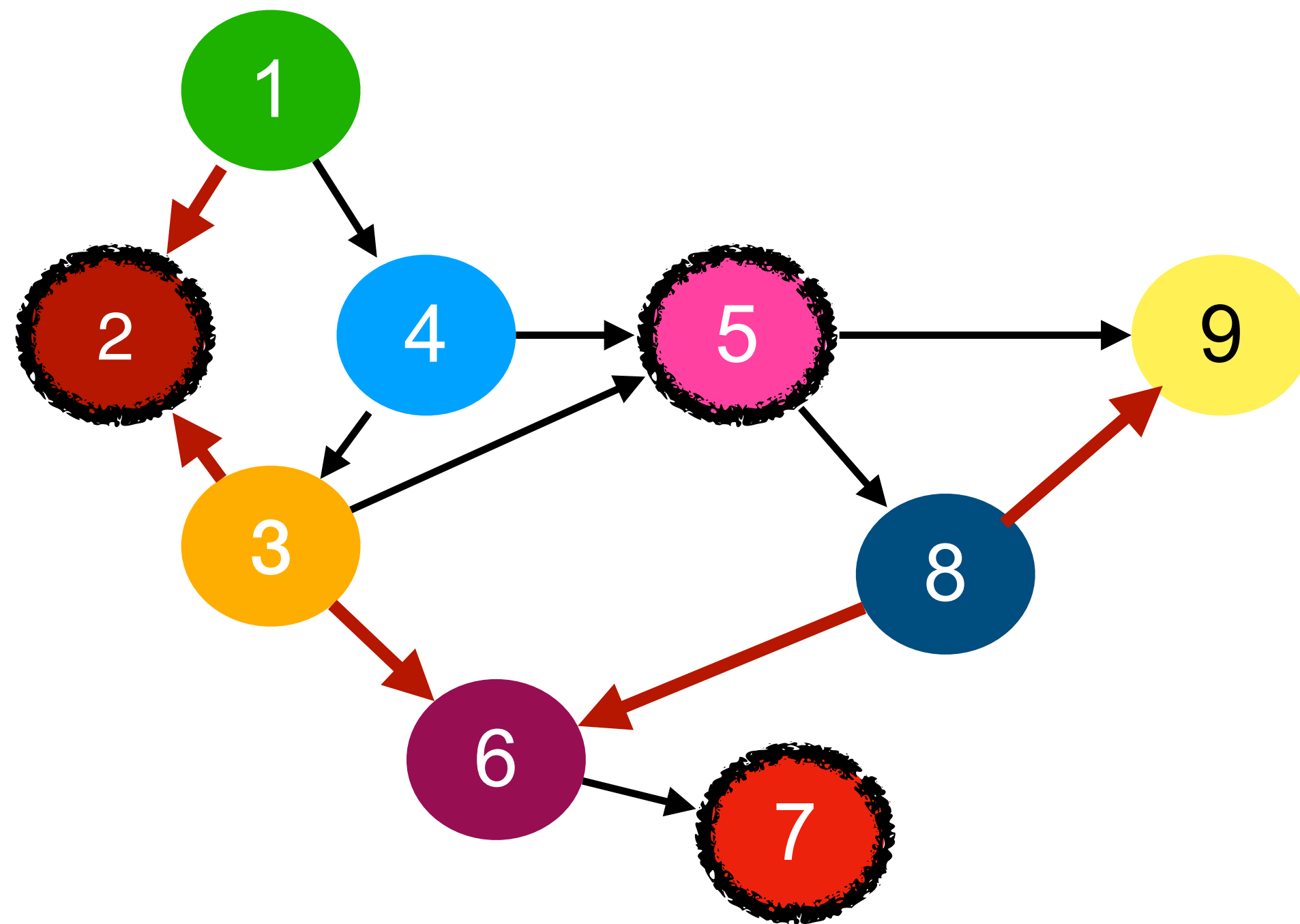Is the path from 1 to 9 through 1,4,5,8,9 blocked when **A**= {2,5,7}
- ● True
- ○ False

3 True or False   0 points

Is the path from 1 to 9 through 1, 2, 3, 5, 9 blocked when **A**= {2,5,7}?
- ● True
- ○ False

Optional exercise in Canvas: d-separation 2

1 True or False   0 points

Is the path from 1 to 9 through 1,4,5,9 blocked when **A**= {2,5,7}?

⦿ True

◯ False

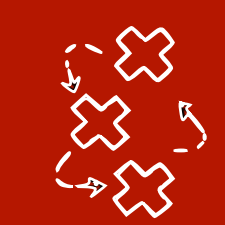**3** True or False   0 points

Is the path from 1 to 9 through 1, 2, 3, 5, 9 blocked when **A**= {2,5,7}?

⦿ True

◯ False

2 True or False   0 points

Is the path from 1 to 9 through 1,4,5,8,9 blocked when **A**= {2,5,7}
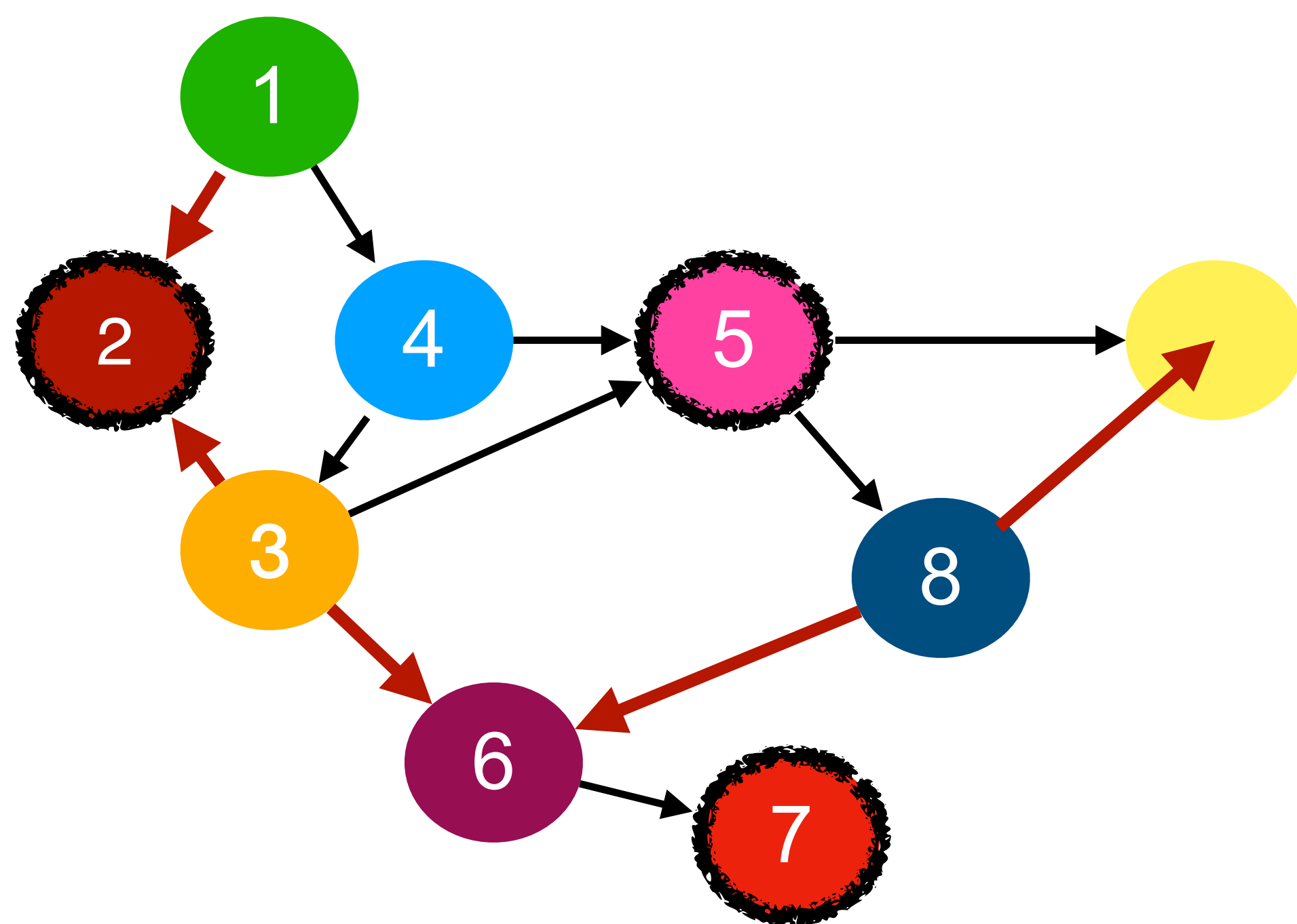
⦿ True

◯ False

4 True or False   0 points

Is the path from 1 to 9 through 1,2,3,6,8,9 blocked when **A**= {2,5,7}?

◯ True

⦿ False

Optional exercise in Canvas: d-separation 2