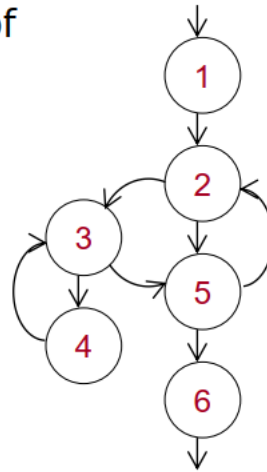


## Exercise 12.1

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○ Given the following flow graph:

- Compute the dominators of all nodes.
- Find all back edges in the flow graph.
- Find all natural loops defined by each back edge.



$$(1) D(1) = \{1\}$$

$$D(2) = \{1, 2\}$$

~~$$D(3) = \{1, 2, 3, 4\}$$~~

$$D(3) = \{1, 2, 3\}$$

$$D(4) = \{1, 2, 3, 4\}$$

$$D(5) = \{1, 2, 5\}$$

$$D(6) = \{1, 2, 5, 6\}$$

$$(2) 5 \rightarrow 2$$

$$4 \rightarrow 3$$

$$(3) \{2, 3, 4, 5\} \text{ 和 } \{3, 4\}$$