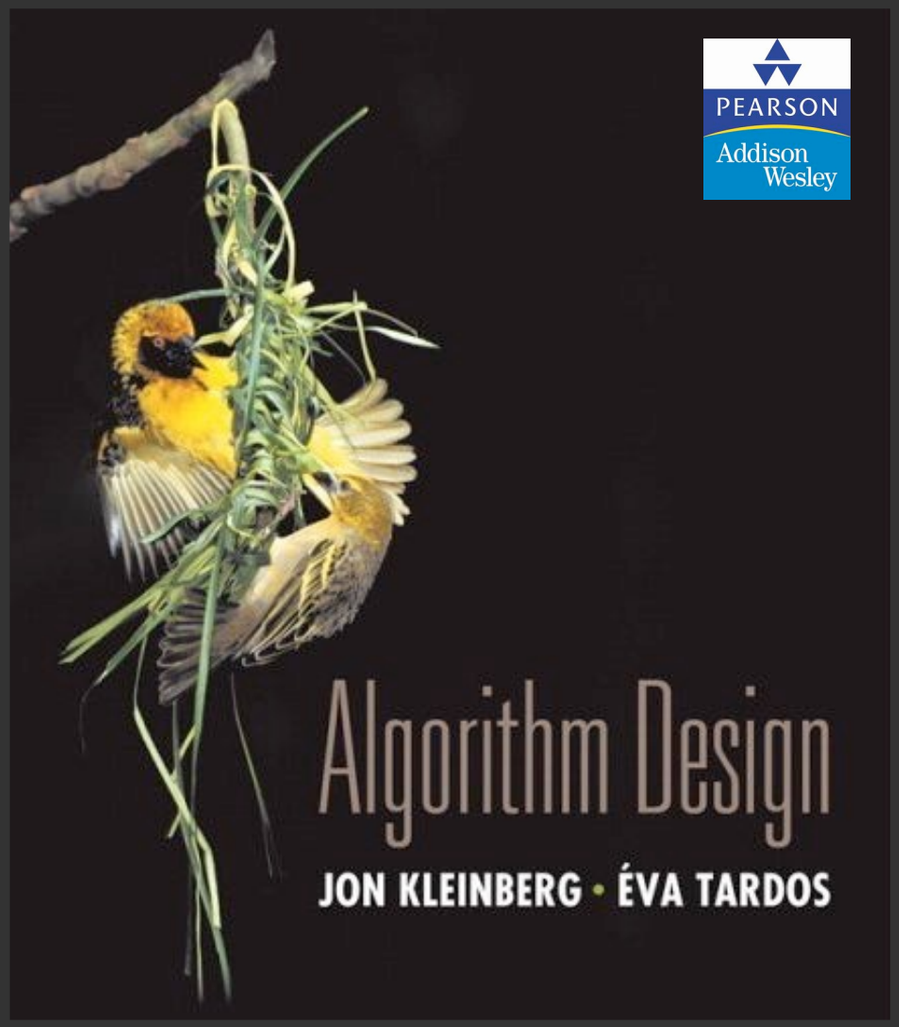



# 4. GREEDY ALGORITHMS II

- *red-rule blue-rule demo*



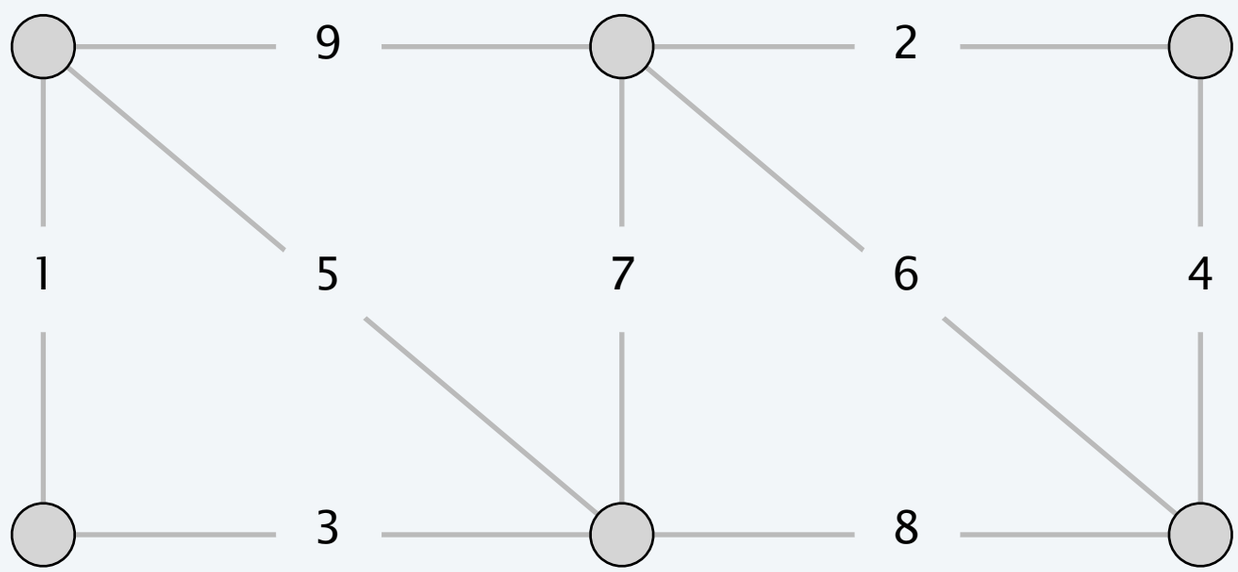
Last updated on 7/25/17 10:58 AM

# Red-rule blue-rule demo

Red rule. Let $C$ be a cycle with no red edges. Select an uncolored edge of $C$ of max weight and color it red.

Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

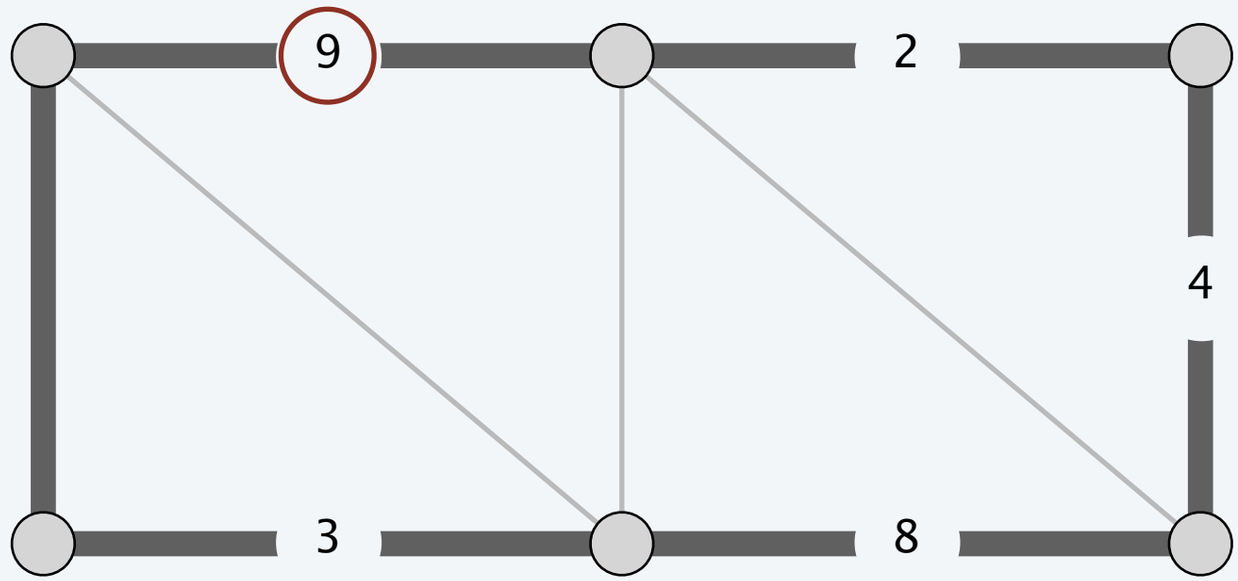
**the input graph**



# Red-rule blue-rule demo

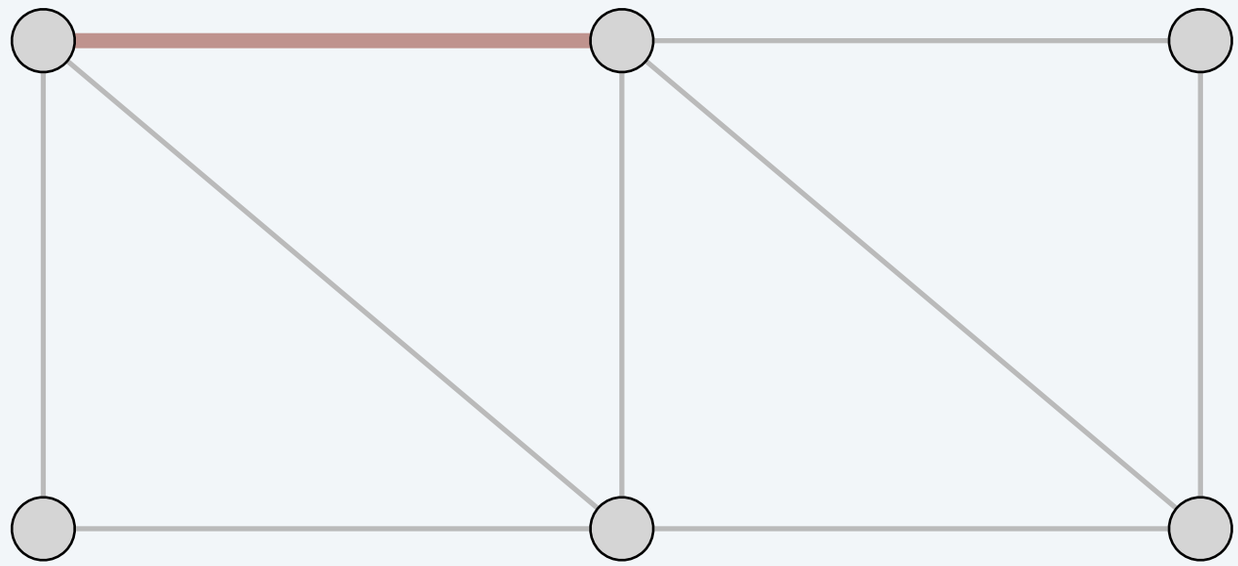
Red rule. Let $C$ be a cycle with no red edges. Select an uncolored edge of $C$ of max weight and color it red.

**apply the red rule to the cycle**



# Red-rule blue-rule demo

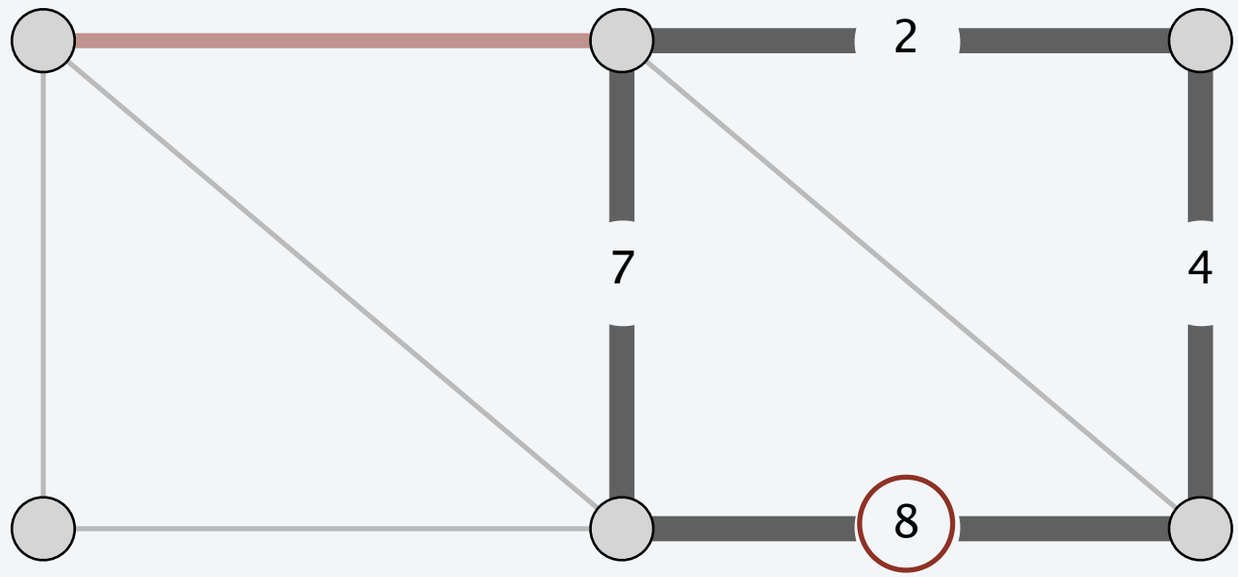
**current set of red and blue edges**



# Red-rule blue-rule demo

Red rule. Let $C$ be a cycle with no red edges. Select an uncolored edge of $C$ of max weight and color it red.

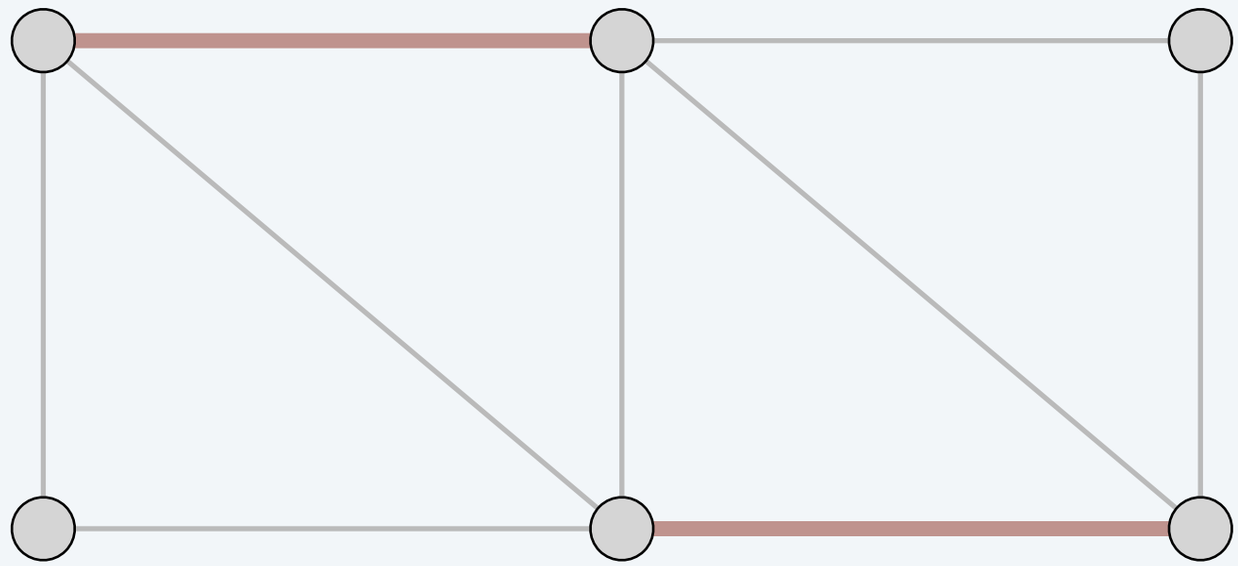
**apply the red rule to the cycle**



# Red-rule blue-rule demo

Red rule. Let $C$ be a cycle with no red edges. Select an uncolored edge of $C$ of max weight and color it red.

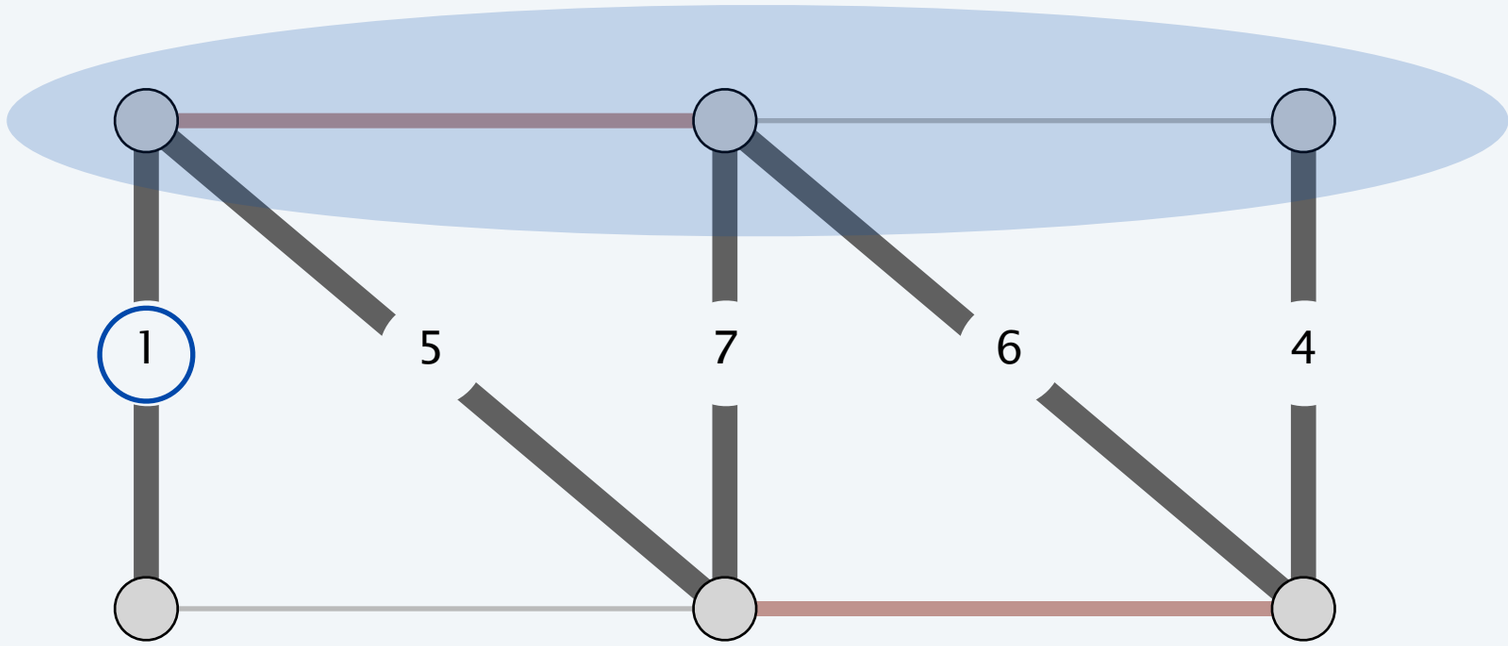
**current set of red and blue edges**



# Red-rule blue-rule demo

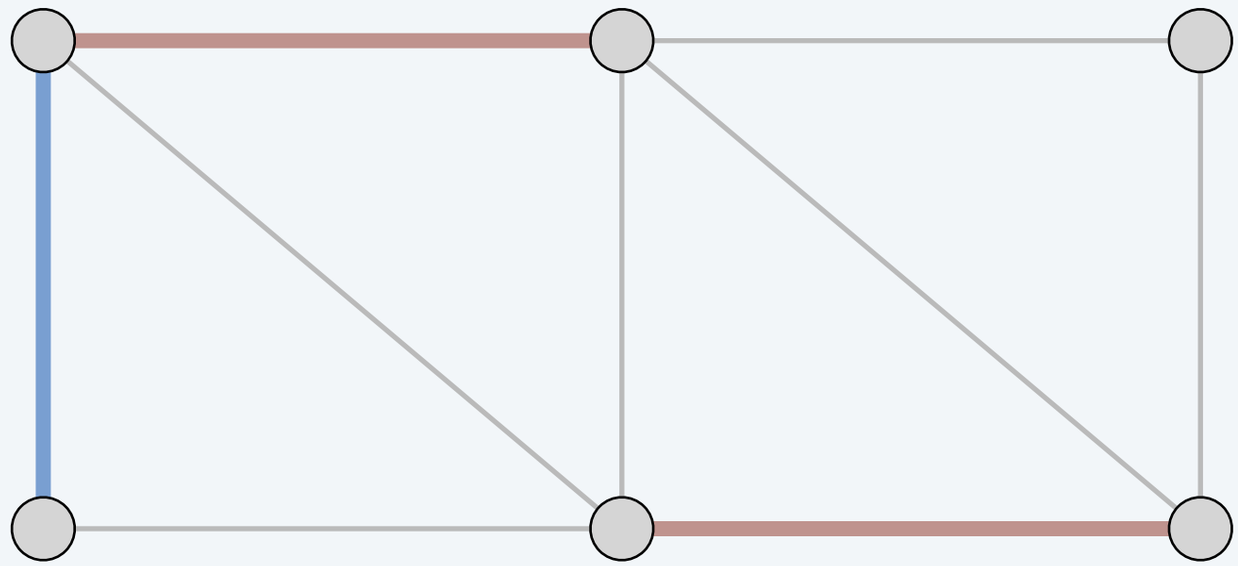
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the blue rule to the cutset**



# Red-rule blue-rule demo

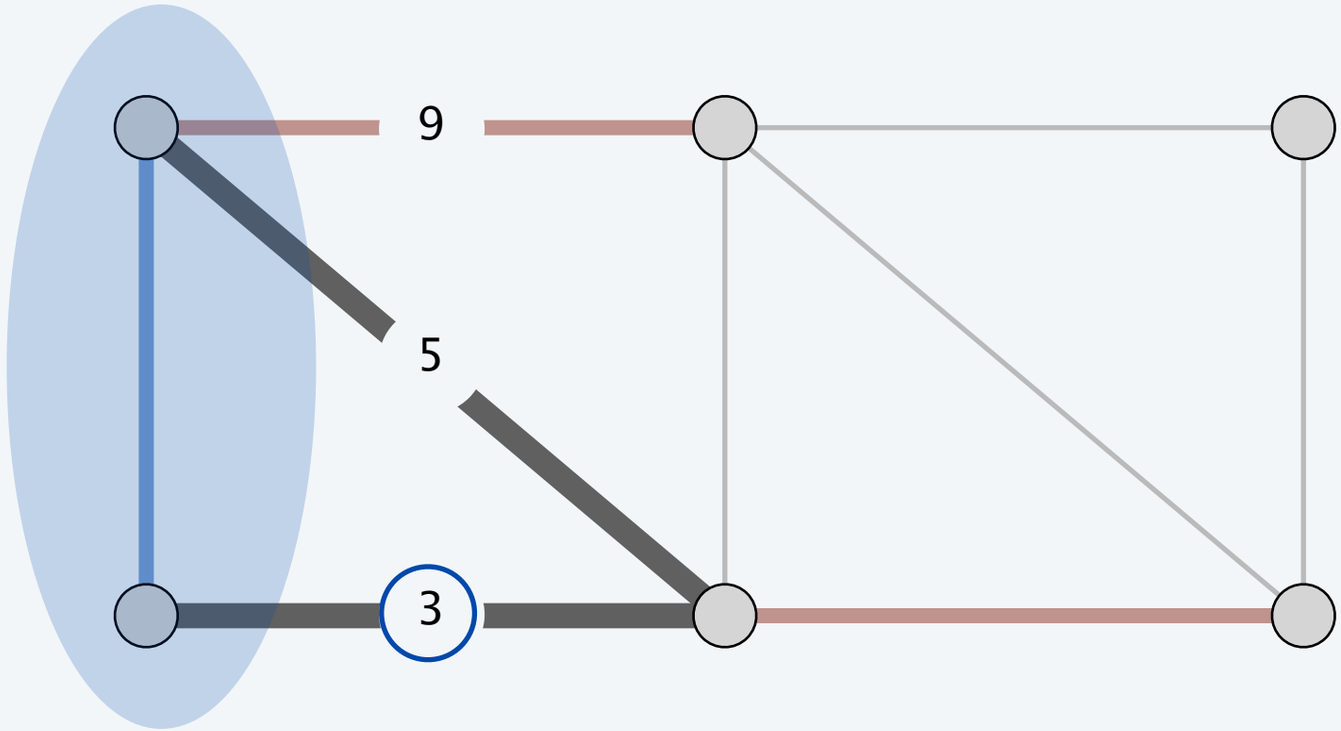
**current set of red and blue edges**



# Red-rule blue-rule demo

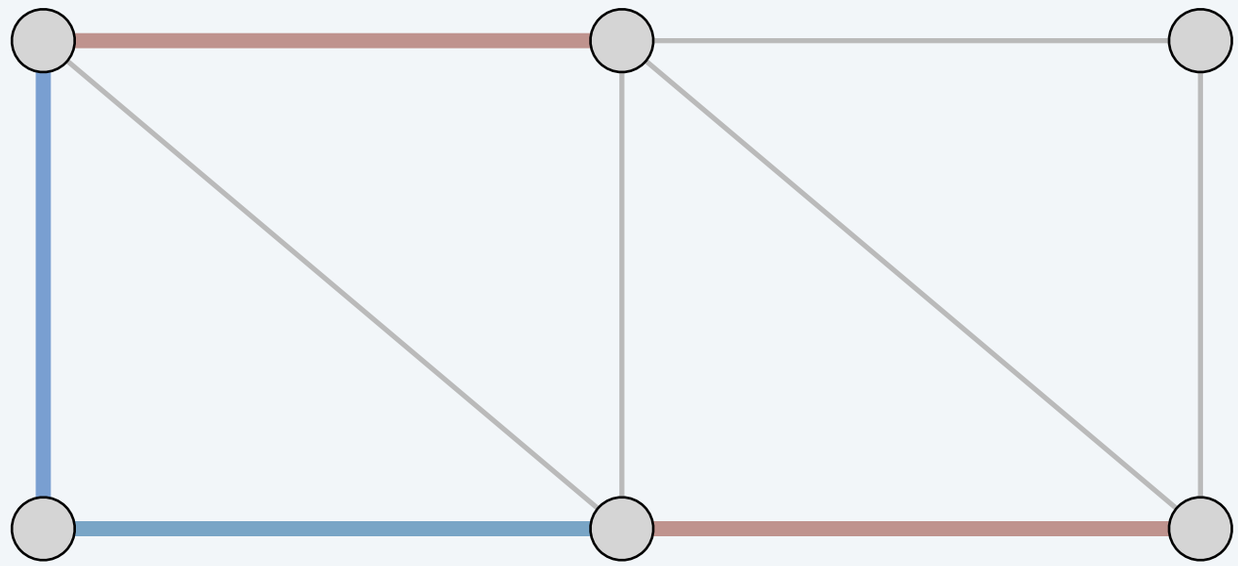
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the blue rule to the cutset**



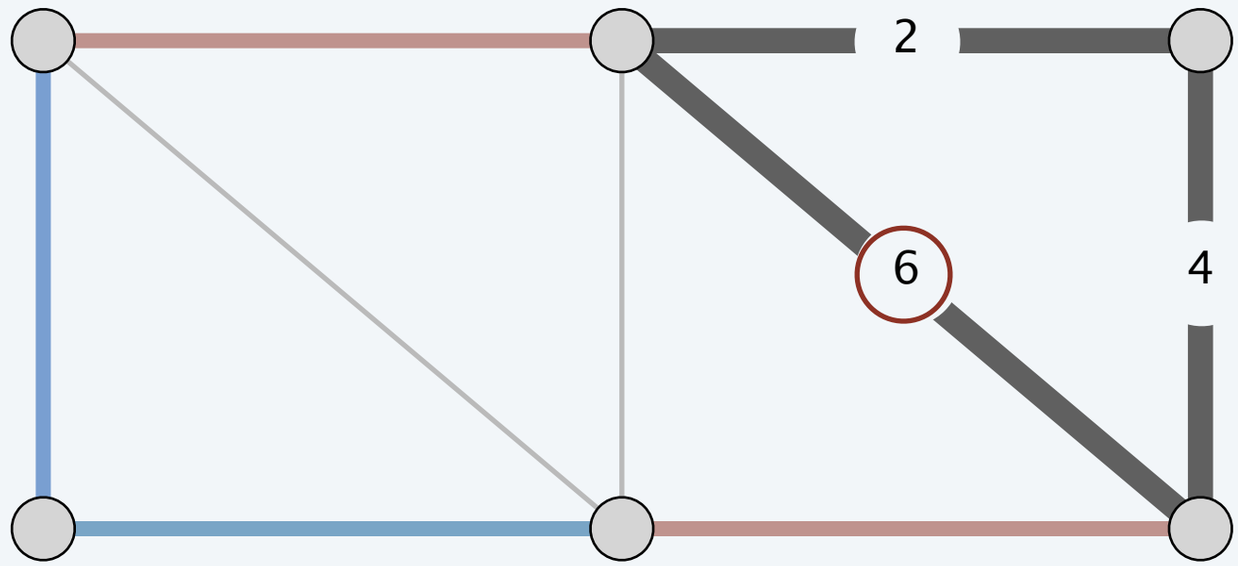
# Red-rule blue-rule demo

**current set of red and blue edges**



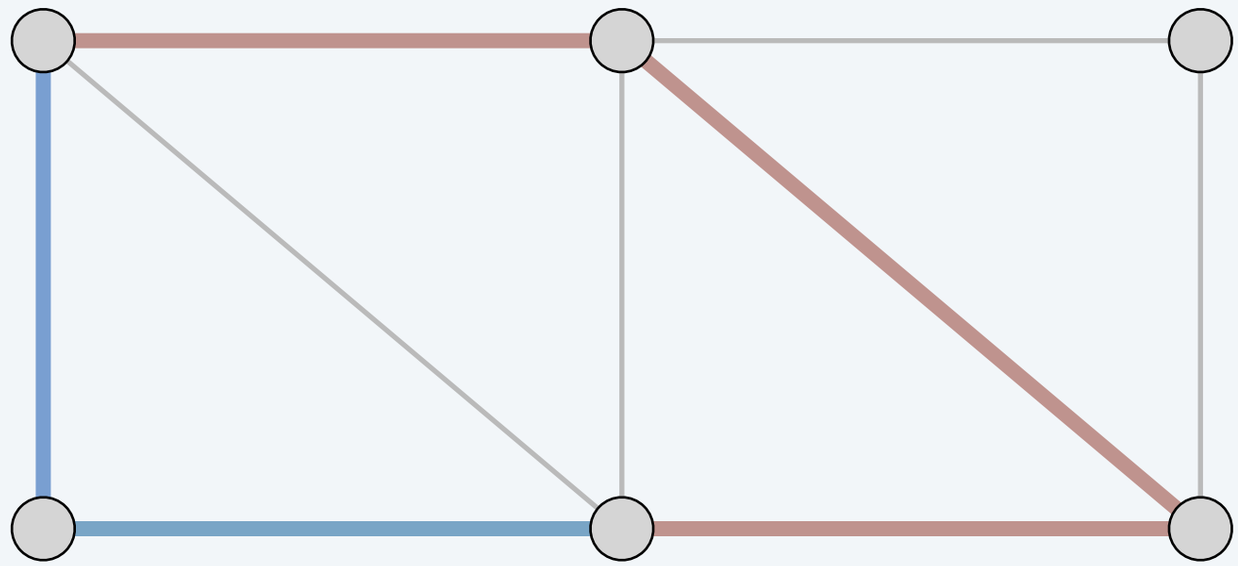
# Red-rule blue-rule demo

**apply the red rule to the cycle**



# Red-rule blue-rule demo

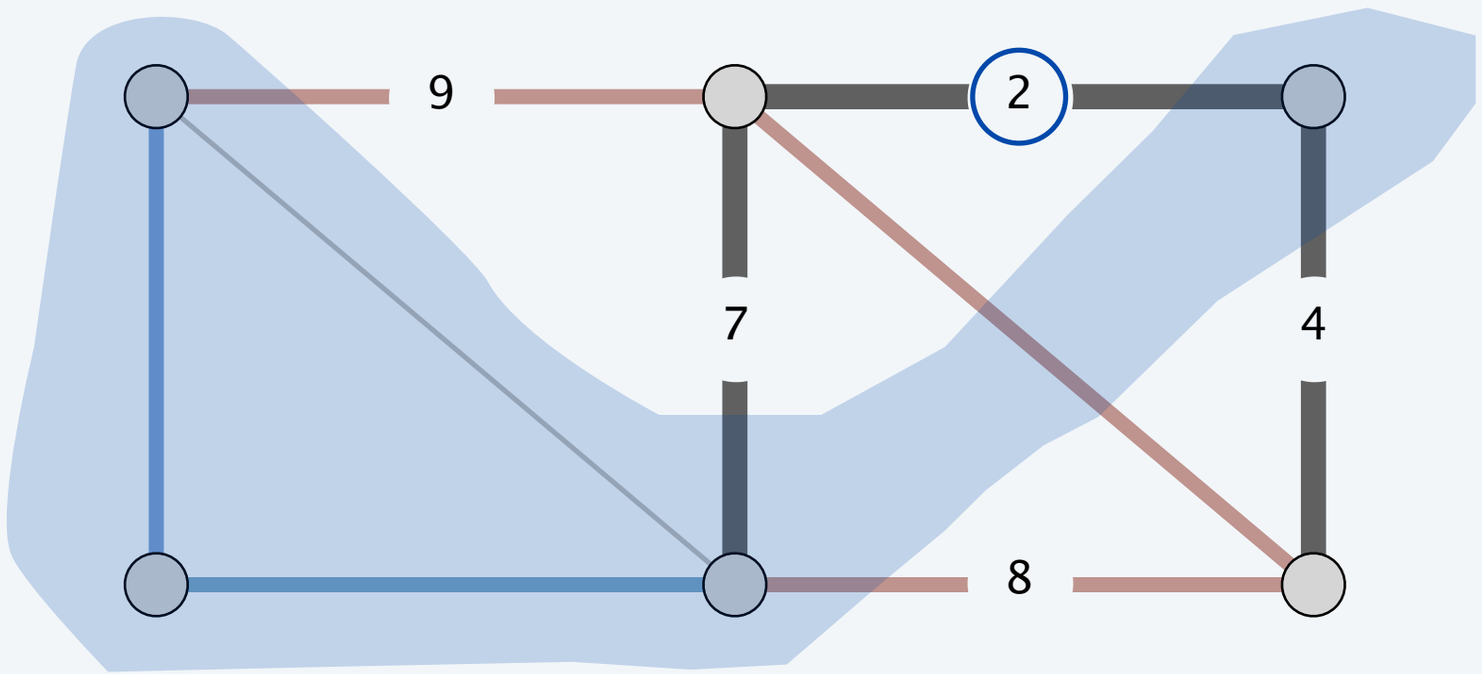
**current set of red and blue edges**



# Red-rule blue-rule demo

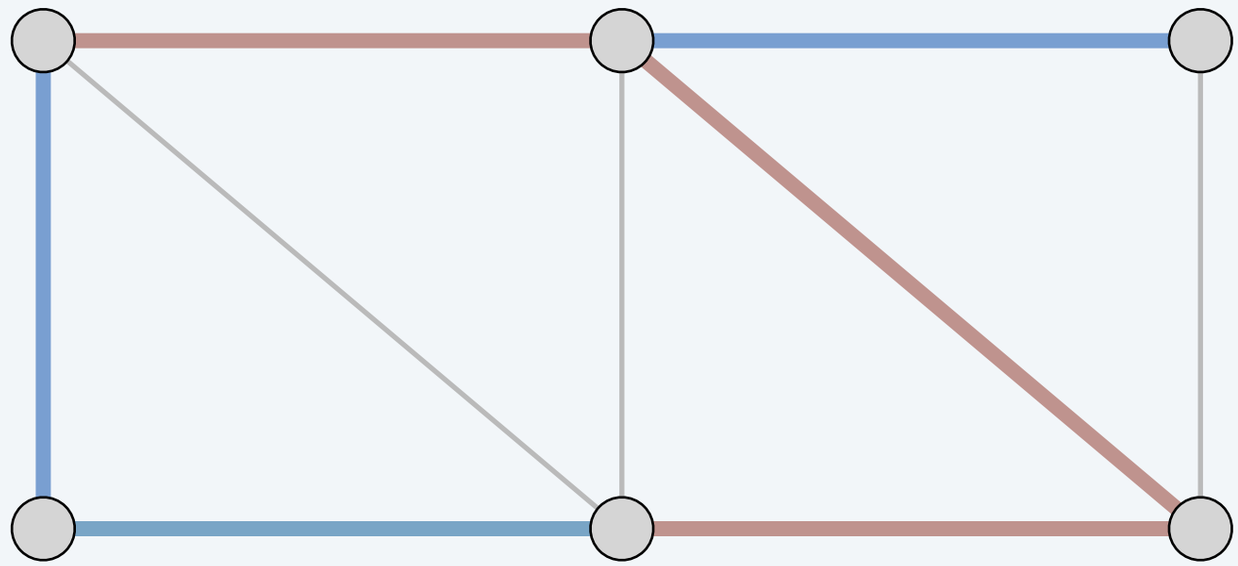
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the blue rule to the cutset**



# Red-rule blue-rule demo

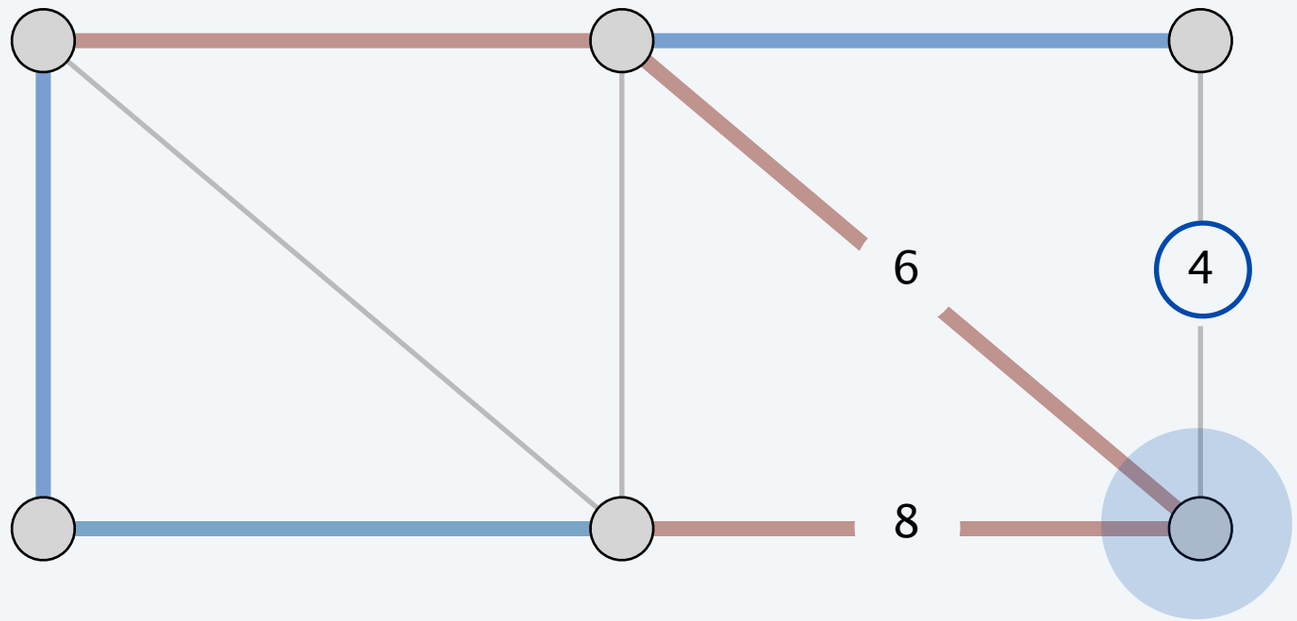
**current set of red and blue edges**



# Red-rule blue-rule demo

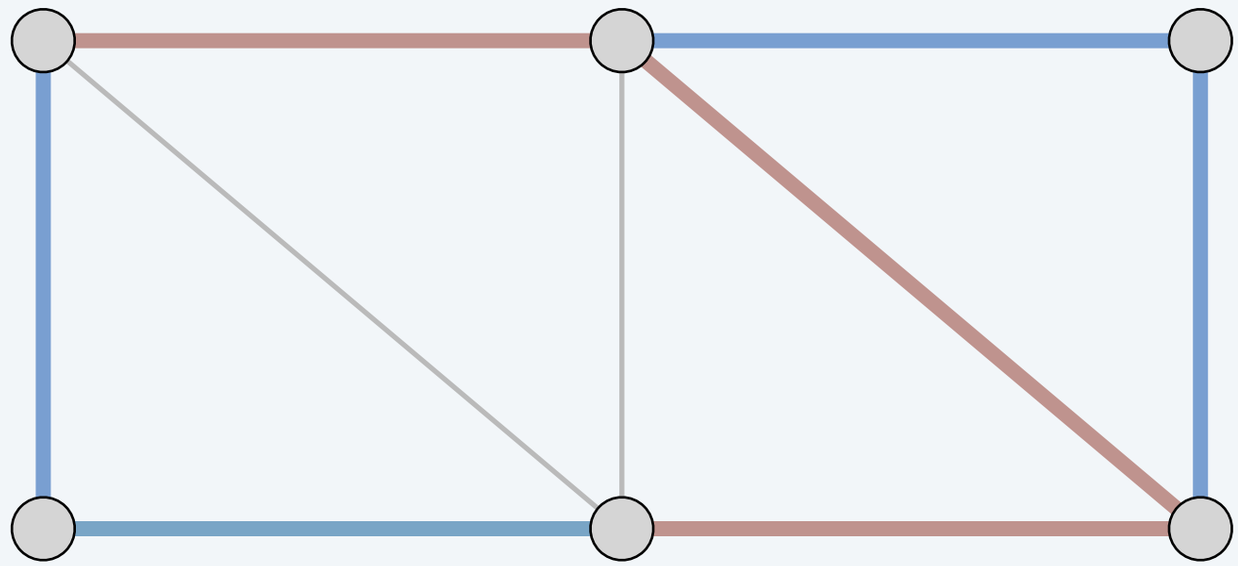
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the blue rule to the cutset**



# Red-rule blue-rule demo

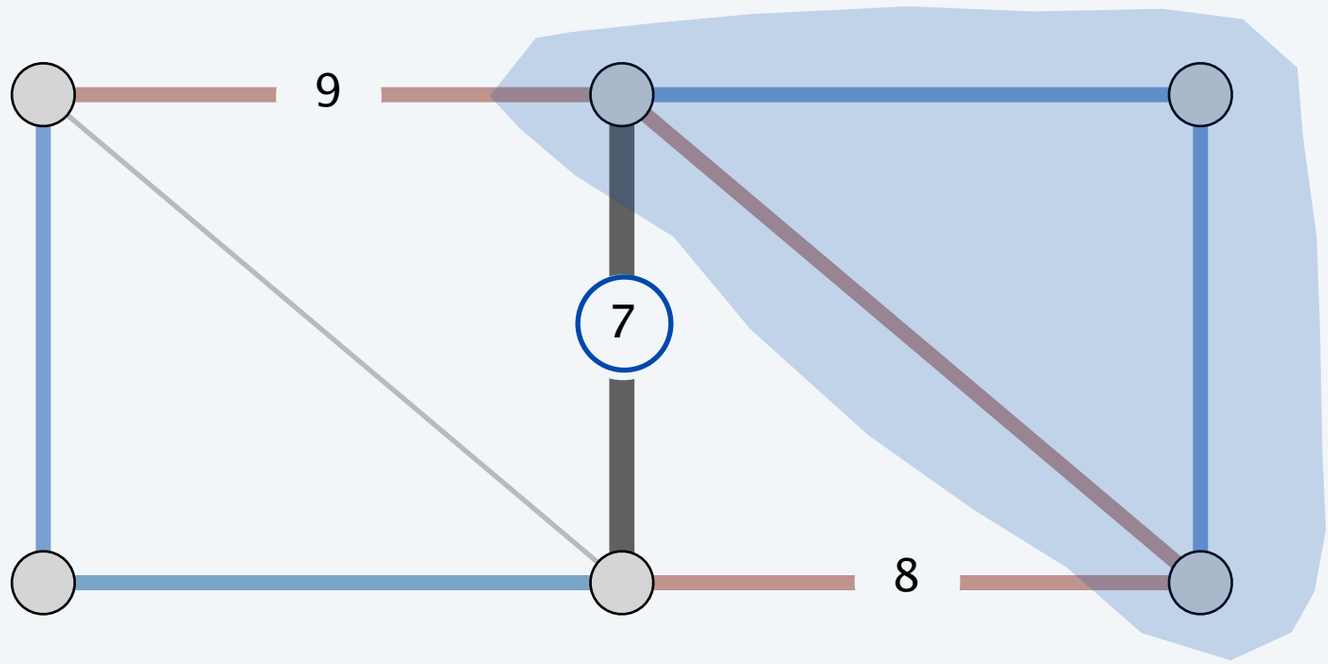
**current set of red and blue edges**



# Red-rule blue-rule demo

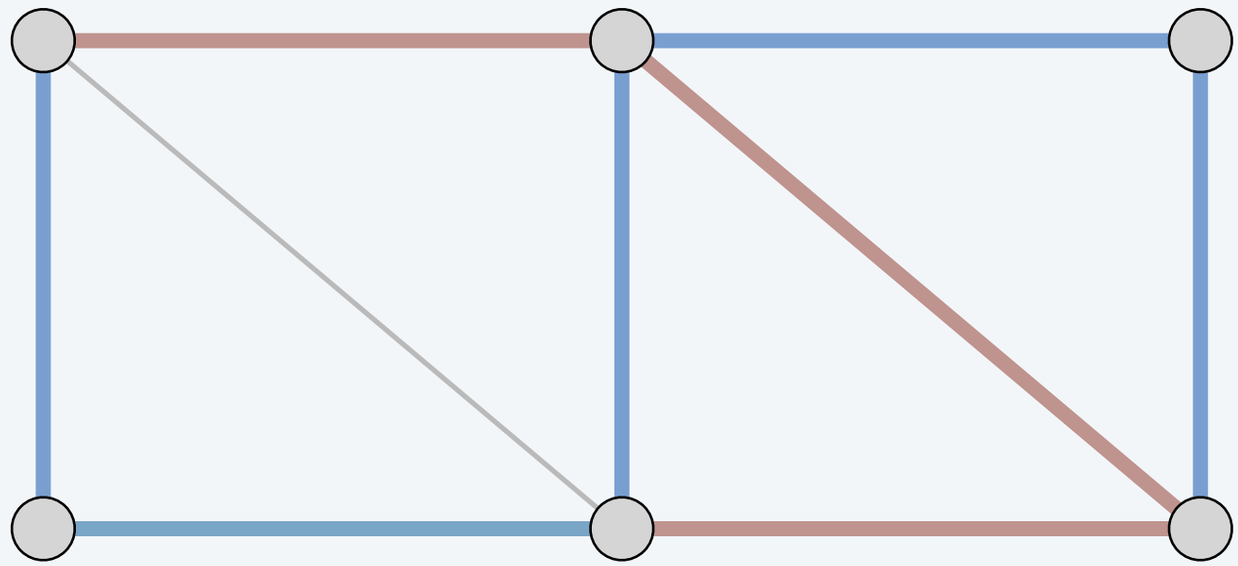
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the blue rule to the cutset**



# Red-rule blue-rule demo

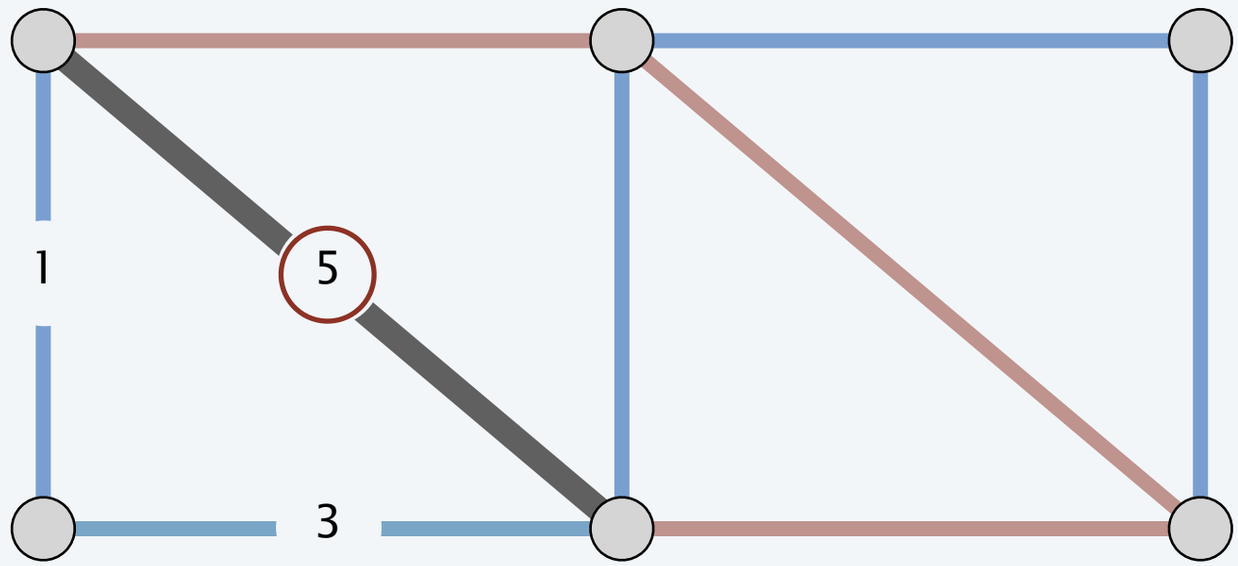
**current set of red and blue edges**



# Red-rule blue-rule demo

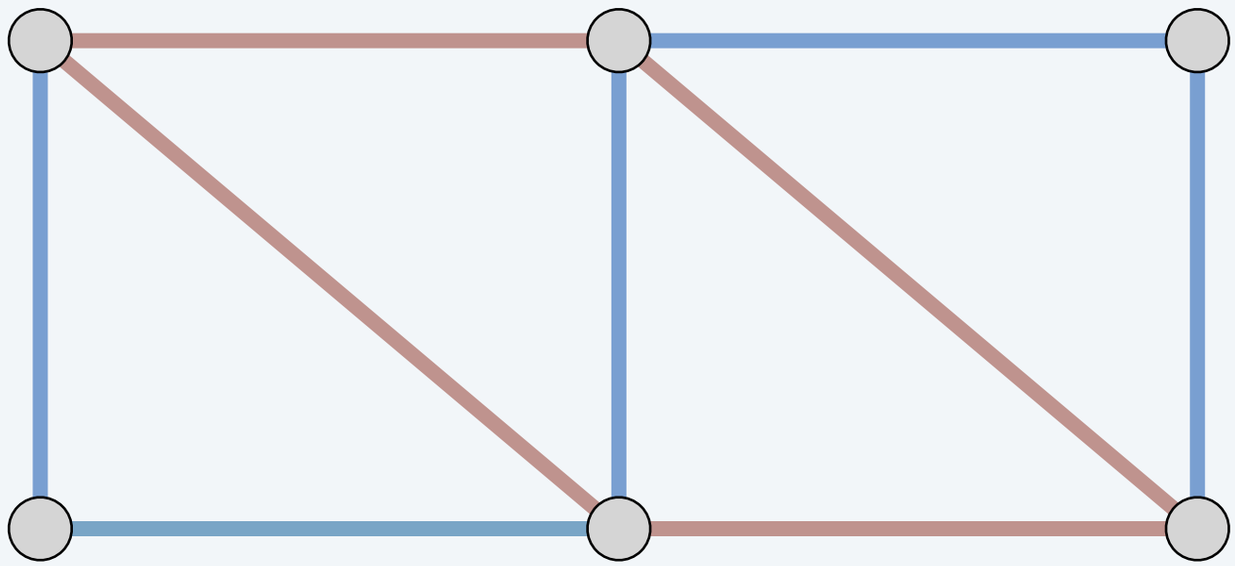
Blue rule. Let $D$ be a cutset with no blue edges. Select an uncolored edge in $D$ of min weight and color it blue.

**apply the red rule to the cycle**



# Red-rule blue-rule demo

**current set of red and blue edges**



# Red-rule blue-rule demo

Greedy algorithm. Upon termination, the blue edges form a MST.

**a minimum spanning tree**