Examples of set identities include:

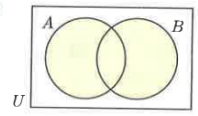
$$A \cup A' = U \qquad A \cap A' = \varnothing$$
$$(A \cup B)' = A' \cap B' \qquad (A \cap B)' = A' \cup B'$$

Example 10 — Self Tutor

On separate Venn diagrams, shade these regions for two intersecting sets A and B:

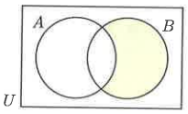
a $A \cup B$ **b** $A' \cap B$ **c** $(A \cap B)'$

a



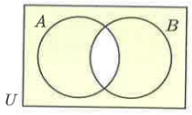
$A \cup B$ means in A, B, or both.

b



$A' \cap B$ means outside A, intersected with B.

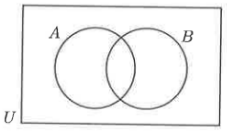
c



$(A \cap B)'$ means outside the intersection of A and B.

EXERCISE 6G.1

1



On separate Venn diagrams, shade the region:

a in A **b** not in A
c in neither A nor B **d** in A and B
e in either A or B, but not both.

2

On separate Venn diagrams, shade: