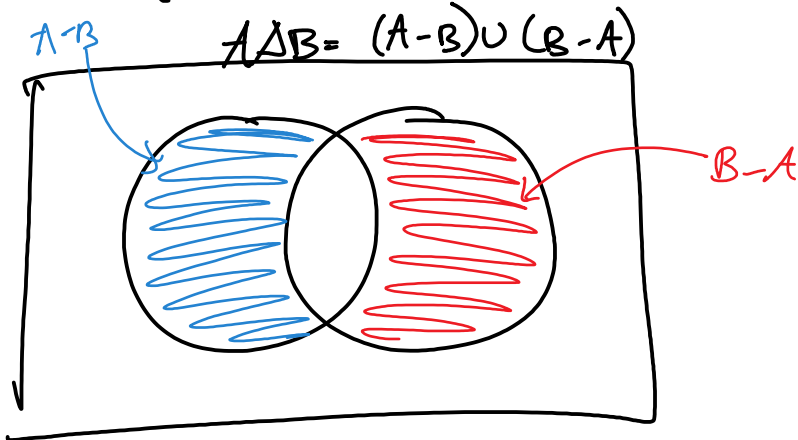


# Set difference and Euler Diagrams

Thursday, October 25, 2018 1:24 PM

$A - B = \{\text{elements in } A \text{ but not in } B\}$

$B - A = \{\text{elements in } B \text{ but not in } A\}$



(d)  $A = \{1, 2, 3, 4\}$   
 $B = \{3, 4, 5\}$   
 $A - B = \{1, 2, \cancel{3}, \cancel{4}\} = \{1, 2\}$

$B - A = \{\cancel{3}, \cancel{4}, 5\} = \{5\}$

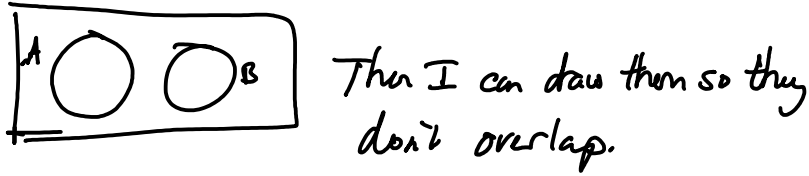
↑  
get rid of the elements in A

Notice, we normally draw the Venn Diagram like this

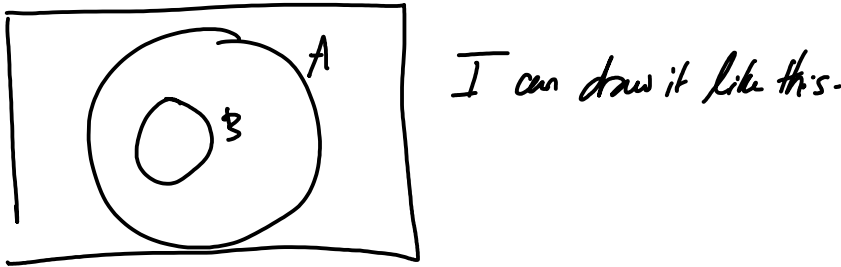




However, what if I had 2 sets which are disjoint?



What if I knew that  $B \subseteq A$ ?

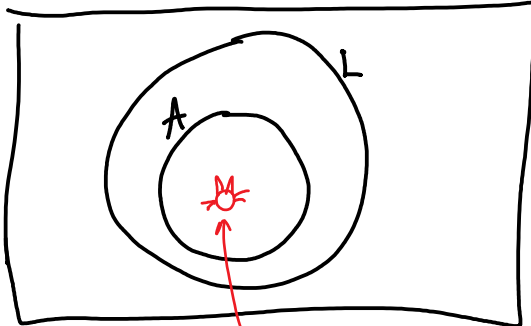


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### Euler Diagrams

64 All animals have 4 legs  $\rightarrow A \subseteq L$   
 Cats are animals  $\leftarrow x \in A$

$\therefore$  Cats have 4 legs.  $x \in L$ ? — Is this true based on the Euler diagram?

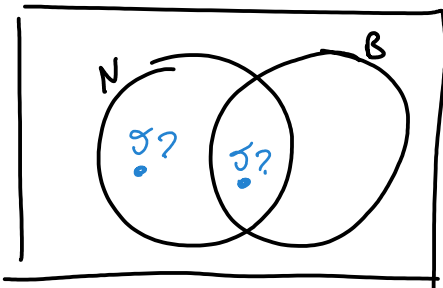


$x \in L$  So cats have 4 legs  
 The argument is Valid

⑦ Some nurses wear blue uniforms  
 Jennifer is a nurse

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∴ Jennifer wears a blue uniform

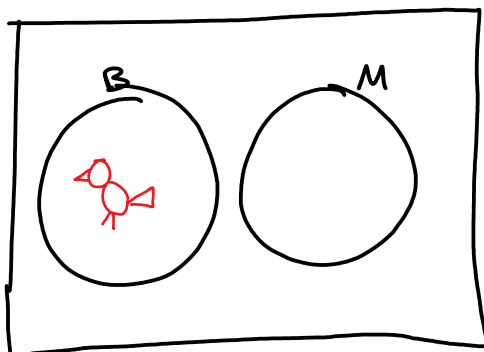


I don't know where to draw Jennifer!  
 Is it possible for her to not wear a blue uniform? Yes!  
 So the argument is NOT Valid

⑧ No <sup>B</sup> birds are <sup>M</sup> mammals  
 The cardinal is a bird. ← ∈ B

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The cardinal is not a mammal



The cardinal is definitely not in M, so the argument is Valid