

Tuesday, October 06, 2009

Q1]... Suppose  $A = \{a, b, c\}$  and that  $\mathcal{P}(A)$  denotes the power set of  $A$ . Say whether the following are true or false.

(1)  $\{a\} \in A$ . FALSE  $\{a\} \subseteq A$

(2)  $\{a\} \in \mathcal{P}(A)$ . TRUE

(3)  $\emptyset \subset \mathcal{P}(A)$ . TRUE

(4)  $\emptyset \in \mathcal{P}(A)$ . TRUE

(5)  $(a, c) \in A \times A$ . TRUE

(6)  $|A \times A| = 2^3$ . FALSE  $|A \times A| = 3^2 = 9$

(7)  $|\mathcal{P}(A)| = 3^2$ . FALSE  $|\mathcal{P}(A)| = 2^3 = 8$

(8)  $|\{(x, y) \in A \times A \mid x \neq y\}| = 3$ . FALSE ... remove  $(1,1), (2,2), (3,3)$  from  $A \times A$ . Left with 6 elements.