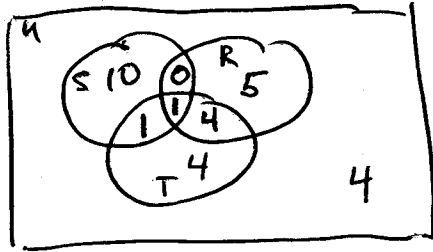


MATH 110 - QUIZ 3 - 18 SEPTEMBER 2009

Answer all of the following questions in the space provided.

1. (4 pts.) Suppose that  $n(U) = 29$ ,  $n(R) = 10$ ,  $n(S) = 12$ ,  $n(T) = 10$ ,  $n(S \cup T) = 20$ ,  $n(R \cap T) = 5$ ,  $n(S \cap R) = 1$  and  $n(S \cap R \cap T) = 1$ . Draw an appropriate Venn diagram and use the given data to determine the number of elements in each basic region.



$$n(S \cup T) = n(S) + n(T) - n(S \cap T)$$

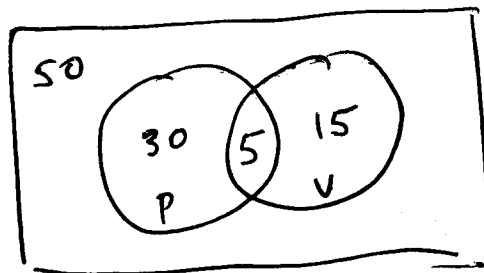
$$20 = 12 + 10 - n(S \cap T)$$

$$20 = 22 - n(S \cap T)$$

$$n(S \cap T) = 2$$

2. (3 pts. each) A group of applicants for training in air-traffic control consisted of 35 pilots, 20 veterans, 30 pilots who were not veterans and 50 people who were neither pilots nor veterans.

- (a) Use this data to complete a Venn diagram displaying the characteristics of the applicants.



$$P = \{\text{pilots}\}$$

$$V = \{\text{veterans}\}$$

- (b) How many applicants were there all together?

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