

Problem

Let $A = \{2, 3, 5\}$ and $B = \{x, y\}$. Let p_1 and p_2 be the **projections of $A \times B$ onto the first and second coordinates**. That is, for each pair $(a, b) \in A \times B$, $p_1(a, b) = a$ and $p_2(a, b) = b$.

a. Find $p_1(2, y)$ and $p_1(5, x)$. What is the range of p_1 ?

b. Find $p_2(2, y)$ and $p_2(5, x)$. What is the range of p_2 ?

Step-by-step solution

Step 1 of 3

$$A = \{2, 3, 5\}, B = \{x, y\}$$

$$A \times B = \{(2, x), (2, y), (3, x), (3, y), (5, x), (5, y)\}$$

If $p_1(a, b) = a$ and $p_2(a, b) = b$ are the projections of $A \times B$

Step 2 of 3

a) $p_1(2, y) = 2,$

$$p_1(5, x) = 5,$$

The range of p_1 is A

Step 3 of 3

b) $p_2(2, y) = y,$

$$p_2(5, x) = x$$

The range of p_2 is B