

QUIZ 4

Instructions: Put your name in the blanks above. Put your final answers to each question in the designated spaces on these pages. Show your work—if there is not enough room, use another sheet.

(1) Given the system of equations
$$\begin{cases} 7x + 4y = -2 \\ 6x + 3y = 1 \end{cases}$$

(a) Express the system as a matrix equation.

(b) Showing the matrices to be multiplied, solve your matrix equation for x and y .

(2) List the elements in the set S , where S is defined by:

(a) $S = \{ x \mid x \text{ is an even integer, greater than } -5, \text{ and less than } 7 \}$

(b) $S = \{ x \mid x \text{ is a letter in the word "ARITHMETIC", but not in "GEOMETRY"} \}$

(3) Let $U = \{a, b, c, d, e, f, g, h\}$, $A = \{b, c, d, e\}$, $B = \{a, d, h\}$, $C = \{a, b, c, g\}$.

Find each of the following:

(a) $A \cap B' =$

(b) $(A \cup B)' =$

(c) $(A \cap B) \cap B' =$

(d) $(B \cup C) \cap A' =$

(e) $B \cap (A \cap C)' =$

(4) Let $U = \{\text{all students at Northeastern}\}$, $A = \{\text{all student athletes}\}$, $C = \{\text{all students who commute}\}$, $F = \{\text{all female students}\}$.

(a) Describe the following sets in terms of unions, intersections and/or complements:

$$\{\text{all athletes or resident students}\} =$$

$$\{\text{all male athletes at NU}\} =$$

(b) Describe the following sets in **complete sentences**:

$$F' \cap A \cap C' =$$

$$(F \cap A) \cup (F' \cap C) =$$