

4.10

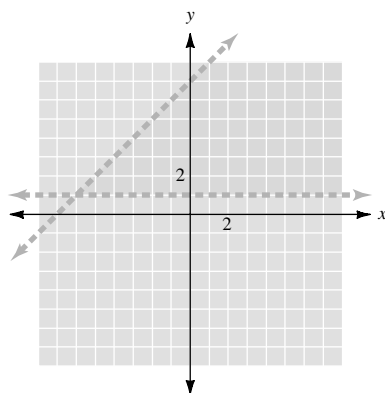
Representation of a Relation in the Plane

• Example 1

Graph the region in the plane determined by the following relation.

$$T = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid 1 < y < x + 7\}$$

Consider the region determined by the above relation as the intersection of the two regions $y > 1$ and $y < x + 7$. Note the dashed lines which indicate that the points that lie on the lines are not elements of the set.



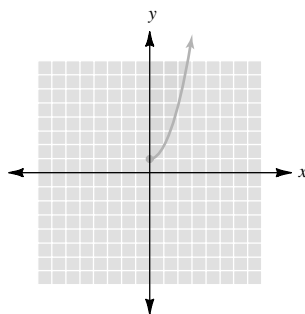
• • • CHECK YOURSELF 1

Graph the region in the plane determined by the following relation.

$$U = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid x \geq 0, y \geq x^2 + 1\}$$

• • • CHECK YOURSELF ANSWER

1.



4.10 Exercises

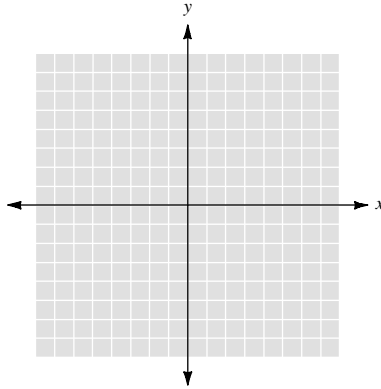
Name _____

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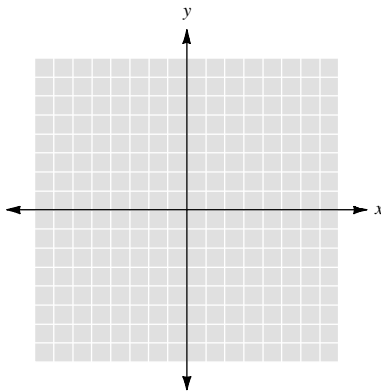
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Graph the region in the plane determined by each of the following relations.

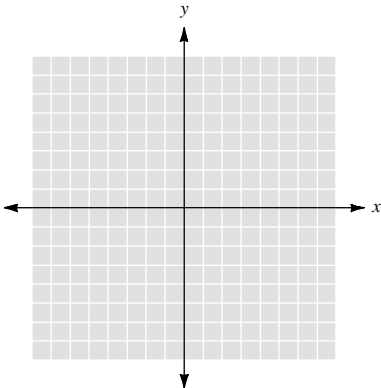
1. $T = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid y < 2x + 1 \text{ and } y < 10\}$



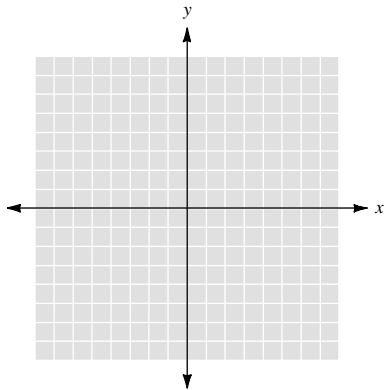
2. $U = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid |x| \leq y < 5\}$



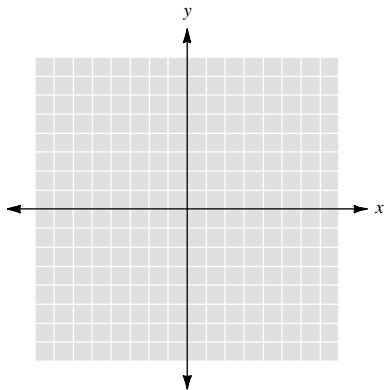
3. $V = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid 0 \leq y \leq 8 \text{ and } y \geq x^2\}$



4. $W = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid x > y^2 \text{ and } y < -x + 3\}$



5. $S = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid |y| < |x|\}$



6. $Y = \{(x, y) \in \mathbb{R} \times \mathbb{R} \mid y > x^2 \text{ and } y < -x^2 + 4\}$

