PRACTICE AND PROBLEM SOLVING

Tell whether each transformation appears to be a translation.

11.

12.

13.

14.
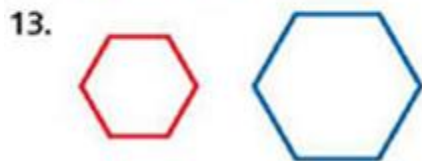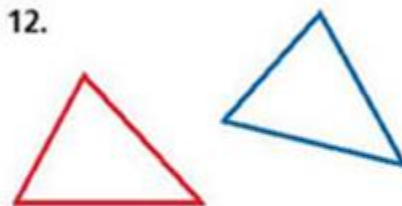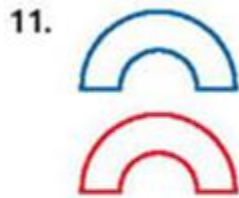
20. Animation An animator draws the ladybug shown and then translates it along the vector $\langle 1, 1 \rangle$, followed by a translation of the new image along the vector $\langle 2, 2 \rangle$, followed by a translation of the second image along the vector $\langle 3, 3 \rangle$.

a. Sketch the ladybug's final position.

b. What single vector moves the ladybug from its starting position to its final position?
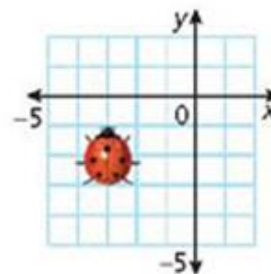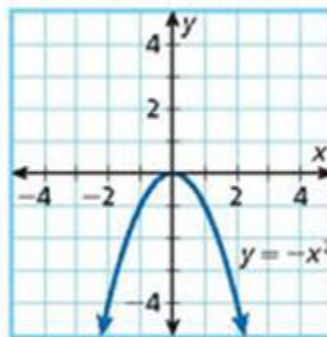

Draw the translation of the graph of each function along the given vector.

21. $\langle 3, 0 \rangle$
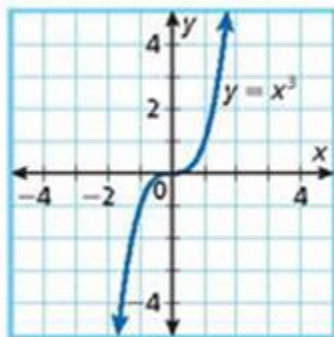
22. $\langle -1, -1 \rangle$

Find the vector associated with each translation.
Then use arrow notation to describe the mapping
of the preimage to the image.

29. the translation that maps point *A* to point *B*

30. the translation that maps point *B* to point *A*

31. the translation that maps point *C* to point *D*

32. the translation that maps point *E* to point *B*

33. the translation that maps point *C* to the origin
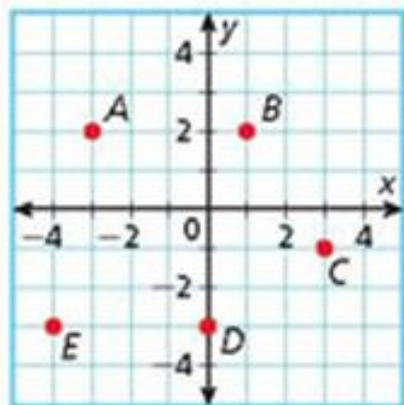
39. What is the image of $P(1, 3)$ when it is translated along the vector $\langle -3, 5 \rangle$?

    Ⓐ $(-2, 8)$ Ⓑ $(0, 6)$ Ⓒ $(1, 3)$ Ⓓ $(0, 4)$

40. After a translation, the image of $A(-6, -2)$ is $B(-4, -4)$. What is the image of the point $(3, -1)$ after this translation?

    Ⓕ $(-5, 1)$ Ⓖ $(5, -3)$ Ⓗ $(5, 1)$ Ⓘ $(-5, -3)$

41. Which vector translates point *Q* to point *P*?

    Ⓐ $\langle -2, -4 \rangle$ Ⓒ $\langle -2, 4 \rangle$

    Ⓑ $\langle 4, -2 \rangle$ Ⓓ $\langle 2, -4 \rangle$