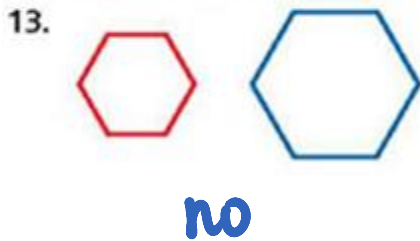
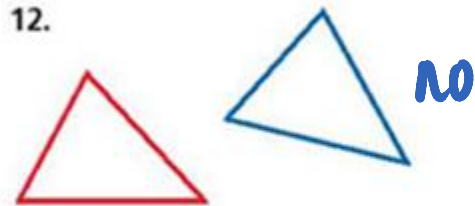


## 9.2 Translations Homework

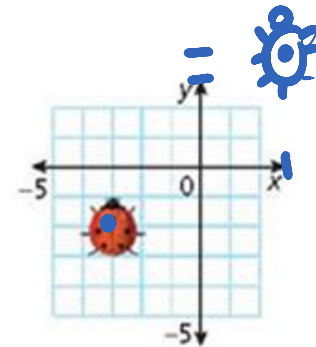
Pg. 614 #11-14, 20-22, 29-33, 39-41

### PRACTICE AND PROBLEM SOLVING

Tell whether each transformation appears to be a translation.



**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  $\langle 3, 3 \rangle$ .

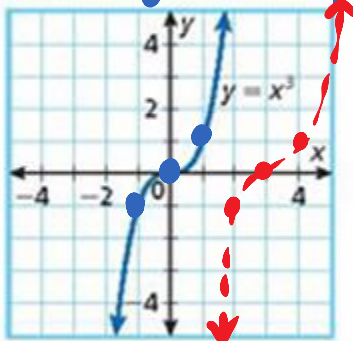


- a. Sketch the ladybug's final position. (3, 4)
- b. What single vector moves the ladybug from its starting position to its final position?

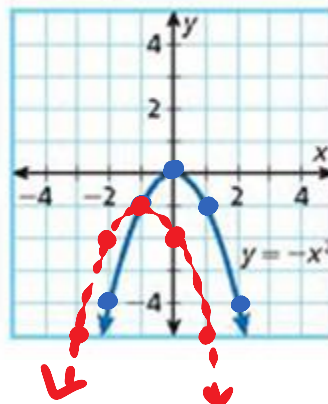
$$\begin{array}{r}
 \langle 1, 1 \rangle \\
 \langle 2, 2 \rangle \\
 + \langle 3, 3 \rangle \\
 \hline
 \langle 6, 6 \rangle
 \end{array}$$

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

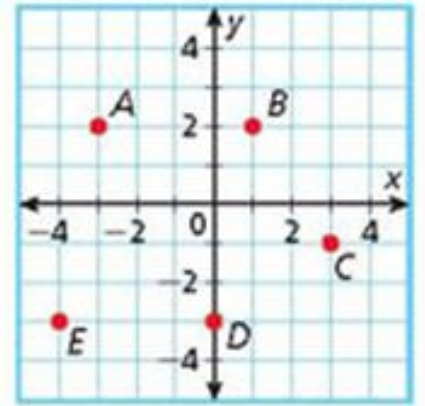
21.  $\langle 3, 0 \rangle$  right 3 up 0



22.  $\langle -1, -1 \rangle$  left 1 down 1



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

29) Vector  $\langle 4, 0 \rangle$ ;  $(x, y) \rightarrow (x+4, y)$ ;  $(-3, 2) \rightarrow (1, 2)$   
 30) vector  $\langle -4, 0 \rangle$ ;  $(x, y) \rightarrow (x-4, y)$ ;  $(1, 2) \rightarrow (-3, 2)$   
 31) vector  $\langle -3, -2 \rangle$ ;  $(x, y) \rightarrow (x-3, y-2)$ ;  $(3, -1) \rightarrow (0, -3)$   
 32) vector  $\langle 5, 5 \rangle$ ;  $(x, y) \rightarrow (x+5, y+5)$ ;  $(-4, -3) \rightarrow (1, 2)$   
 33) vector  $\langle -3, 1 \rangle$ ;  $(x, y) \rightarrow (x-3, y+1)$ ;  $(3, -1) \rightarrow (0, 0)$

39. What is the image of  $P(1, 3)$  when it is translated along the vector  $\langle -3, 5 \rangle$ ?

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

$P(1, 3)$   
 $\langle -3, 5 \rangle$   
 $P'(-2, 8)$

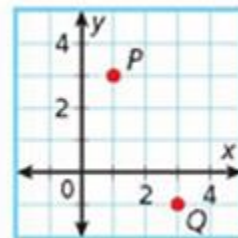
40. After a translation, the image of  $A(-6, -2)$  is  $B(-4, -4)$ . What is the image of the point  $(3, -1)$  after this translation?

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

$A(-6, -2)$   
 $\langle +2, -2 \rangle$   
 $B(-4, -4)$

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

- (A)  $\langle -2, -4 \rangle$      (C)  $\langle -2, 4 \rangle$   
 (B)  $\langle 4, -2 \rangle$      (D)  $\langle 2, -4 \rangle$



So ..  $(3, -1)$   
 $\langle 2, -2 \rangle$   


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 $(5, -3)$

$\langle -2, 4 \rangle$