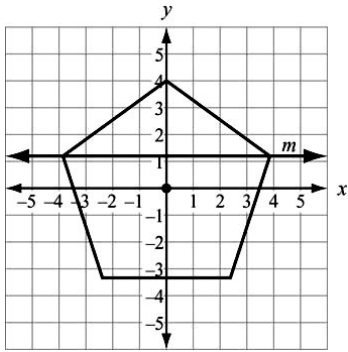


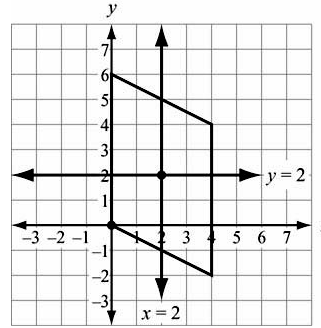
1) A regular pentagon is centered about the origin and has a vertex at (0, 4).



Which transformation maps the pentagon to itself?

- A. a reflection across line m
- B. a reflection across the x -axis
- C. a clockwise rotation of 100° about the origin
- D. a clockwise rotation of 144° about the origin

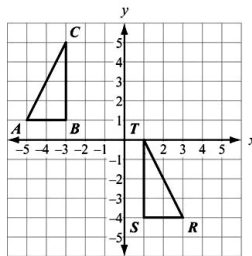
2) A parallelogram has vertices at (0, 0), (0,6), (4, 4), and (4, -2).



Which transformation maps the parallelogram to itself?

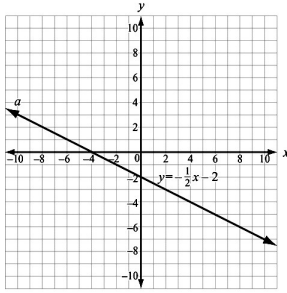
- A. a reflection across the line $x = 2$
- B. a reflection across the line $y = 2$
- C. a rotation of 180° about the point (2, 2)
- D. a rotation of 180° about the point (0, 0)

3) Which sequence of transformations maps $\triangle ABC$ to $\triangle RST$?



- A. Reflect $\triangle ABC$ across the line $x = -1$. Then translate the result 1 unit down.
- B. Reflect $\triangle ABC$ across the line $x = -1$. Then translate the result 5 units down.
- C. Translate $\triangle ABC$ 6 units to the right. Then rotate the result 90° clockwise about the point (1, 1).
- D. Translate $\triangle ABC$ 6 units to the right. Then rotate the result 90° counterclockwise about the point (1, 1).

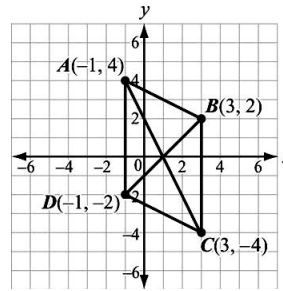
1) An equation of line a is $y = -\frac{1}{2}x - 2$.



Which is an equation of the line that is perpendicular to line a and passes through the point $(-4, 0)$?

- A. $y = -\frac{1}{2}x + 2$
- B. $y = -\frac{1}{2}x + 8$
- C. $y = 2x - 2$
- D. $y = 2x + 8$

2) Parallelogram $ABCD$ has vertices as shown.



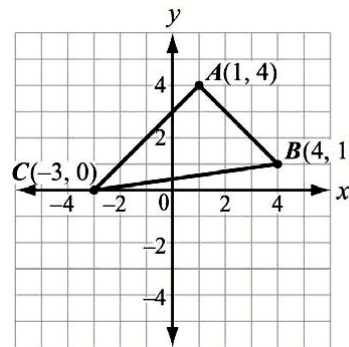
Which equation would be used in proving that the diagonals of parallelogram $ABCD$ bisect each other?

- A. $\sqrt{(3-1)^2 + (2-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$
- B. $\sqrt{(3+1)^2 + (2+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$
- C. $\sqrt{(-1-1)^2 + (4-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$
- D. $\sqrt{(-1+1)^2 + (4+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$

3) Given the points $P(2, -1)$ and $Q(-9, -6)$, what are the coordinates of the point on directed line segment \overline{PQ} that partitions PQ in the ratio $\frac{3}{2}$?

- A. $(-\frac{23}{5}, -4)$
- B. $(-\frac{12}{5}, -3)$
- C. $(-\frac{5}{3}, -\frac{8}{3})$
- D. $(-\frac{5}{3}, -\frac{8}{3})$

4) Triangle ABC has vertices as shown. What is the area of the triangle?



- A. $\sqrt{72}$ square units
- B. 12 square units
- C. $\sqrt{288}$ square units
- D. 24 square units