

Module 7 Study Guide

For problems #1-2, find the slope and distance between the given points. Simplify all radicals if possible.

1. (15, 9), (-7, -27)

$$\text{slope} = \frac{9 - (-27)}{15 - (-7)} = \frac{36}{22} = \frac{18}{11}$$

$$\text{distance} = \sqrt{36^2 + 22^2} = \sqrt{1780}$$

$$= 2\sqrt{445}$$

$$\begin{array}{r} 2 \overline{)1780} \\ \underline{400} \phantom{0} \\ 2800 \\ \underline{1100} \phantom{0} \\ 1700 \\ \underline{1100} \phantom{0} \\ 600 \\ \underline{580} \phantom{0} \\ 20 \end{array}$$

2. (-10, 2), (5, -7)

$$\text{slope} = \frac{2 - (-7)}{-10 - 5} = \frac{9}{-15} = -\frac{3}{5}$$

$$\text{distance} = \sqrt{9^2 + 15^2} = \sqrt{306}$$

$$\begin{array}{r} 2 \overline{)306} \\ \underline{153} \phantom{0} \\ 153 \end{array}$$

3. Write the definition of the following quadrilaterals.

Parallelogram:

Quadrilateral with opposite sides parallel

Rectangle:

Quadrilateral (also p-gram) with 4  $\cong$  angles - all  $90^\circ$ .

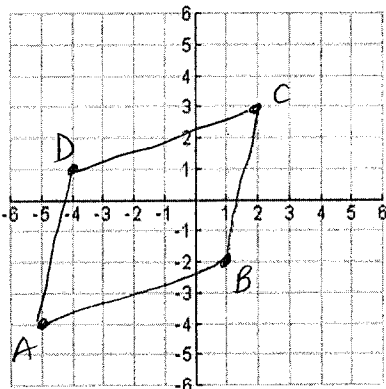
Rhombus:

Quadrilateral (also p-gram) with 4  $\cong$  sides.

Square:

Regular quadrilateral. or, quadrilateral with all sides  $\cong$  and all angles  $\cong$  ( $90^\circ$ ).

4. Show that quadrilateral A(-5, -4), B(1, -2), C(2, 3) and D(-4, 1) is a parallelogram.

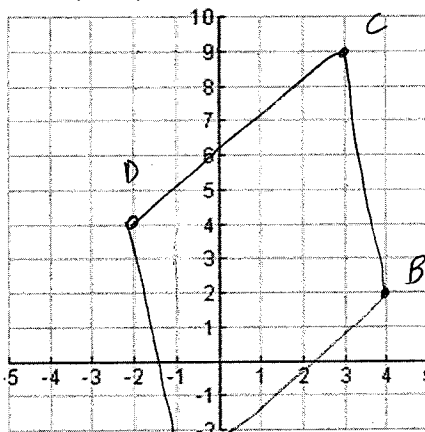


need:  
opp. sides  
with  
same  
slopes

$$m_{\overline{DC}} = m_{\overline{AB}} = \frac{2}{6} = \frac{1}{3} \quad \checkmark$$

$$m_{\overline{AD}} = m_{\overline{BC}} = \frac{5}{1} = 5 \quad \checkmark$$

5. Show that quadrilateral A(-1, -3), B(4, 2), C(3, 9) and D(-2, 4) is a rhombus.

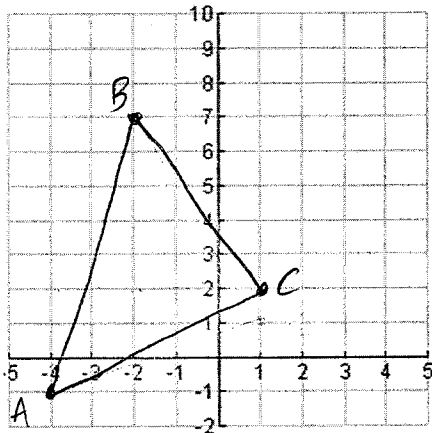


need:  
all sides  
 $\cong$   
(same  
distance)

$$DA = CB = \sqrt{7^2 + 1} = \sqrt{50} = 5\sqrt{2} \quad \checkmark$$

$$PC = AB = \sqrt{25 + 25} = \sqrt{50} = 5\sqrt{2} \quad \checkmark$$

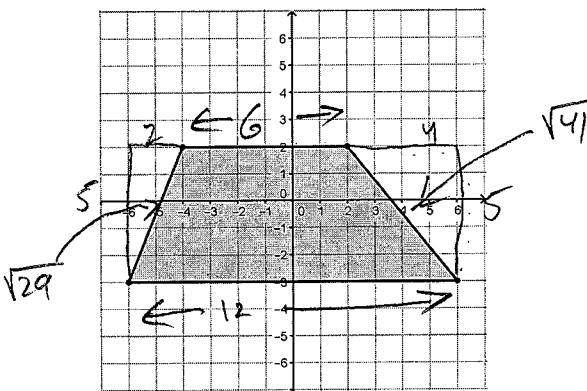
6. Show that A(-4, -1), B(-2, 7), and C(1, 2) are the vertices of an isosceles right triangle.



show:  
 $\overline{BC} \perp \overline{AC}$   
 $BC = AC$   
 $m_{\overline{BC}} = -\frac{5}{3}$   
 $m_{\overline{AC}} = \frac{3}{5} \checkmark$

$AC = \sqrt{3^2 + 5^2} = \sqrt{34} \checkmark$   
 $BC = \sqrt{5^2 + 3^2} = \sqrt{34} \checkmark$

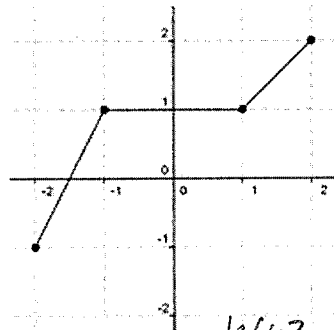
7. Find the perimeter of the following shape.



$P = 18 + \sqrt{29} + \sqrt{41}$

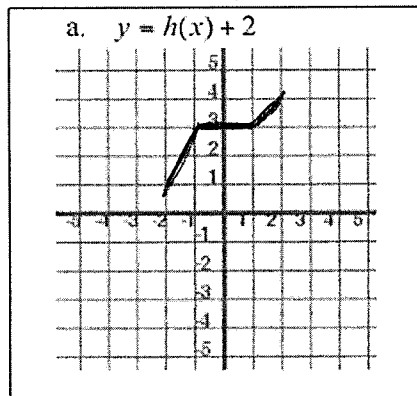
8.

Use the graph of the elementary, or arbitrary, function  $y = h(x)$  below.

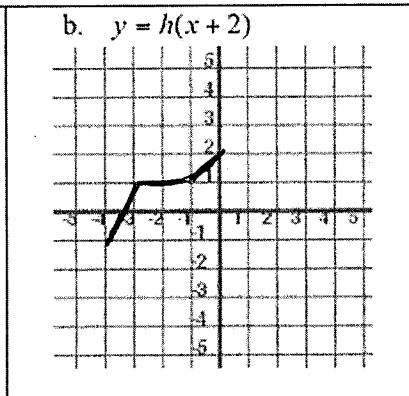


- (i) State the transformation(s).
- (ii) Sketch an accurate graph of the transformed function. Please sketch each graph on its own coordinate plane.

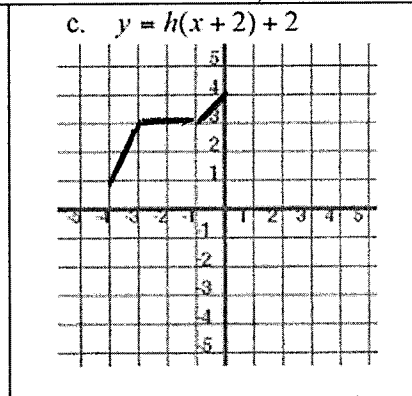
up 2



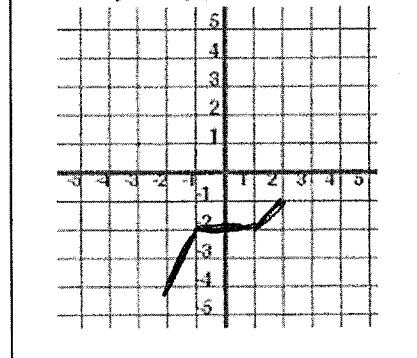
left + 2



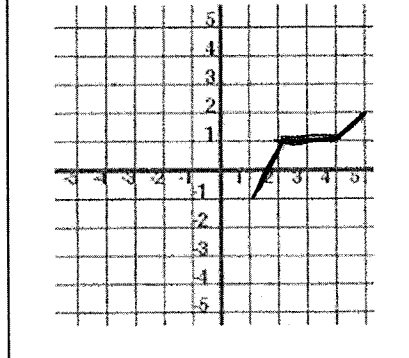
left + 2, up 2



d.  $y = h(x) - 3$  down 3



e.  $y = h(x - 3)$  right + 3



f.  $y = h(x + 2) - 3$  left + 2 down 3

