

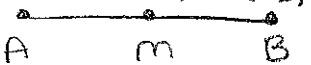
Find the distance between the given two points. Give exact answers

<p>1. <math>(-2, 8), (6, 0)</math></p> $\sqrt{(6+2)^2 + (0-8)^2} = \sqrt{8^2 + (-8)^2} = \sqrt{64+64} = \sqrt{128} = 8\sqrt{2}$ <p>2. <math>8\sqrt{2}</math></p>	<p>2. <math>(-3, -1), (7, 4)</math></p> $\sqrt{(7+3)^2 + (4+1)^2} = \sqrt{10^2 + (5)^2} = \sqrt{100+25} = \sqrt{125} = 5\sqrt{5}$ <p>5. <math>5\sqrt{5}</math></p>
<p>3. <math>(-5, 8), (1, 6)</math></p> $\sqrt{(1+5)^2 + (6-8)^2} = \sqrt{6^2 + (-2)^2} = \sqrt{36+4} = \sqrt{40} = 2\sqrt{10}$ <p>2. <math>2\sqrt{10}</math></p>	<p>4. <math>(-2, 10), (10, -2)</math></p> $\sqrt{(10+2)^2 + (-2-10)^2} = \sqrt{12^2 + (-12)^2} = \sqrt{144+144} = \sqrt{288} = 12\sqrt{2}$ <p>2. <math>12\sqrt{2}</math></p>
<p>5. <math>(8, 3), (2, -1)</math></p> $\sqrt{(2-8)^2 + (-1-3)^2} = \sqrt{(-6)^2 + (-4)^2} = \sqrt{36+16} = \sqrt{52} = 2\sqrt{13}$ <p>2. <math>2\sqrt{13}</math></p>	<p>6. <math>(-10, -15), (-4, -8)</math></p> $\sqrt{(-4+10)^2 + (-8+15)^2} = \sqrt{6^2 + 7^2} = \sqrt{36+49} = \sqrt{85}$ <p>5. <math>5.17</math></p>

Find the Midpoint between the given two points.

<p>7. <math>(3, -7), (-3, 1)</math></p> $\left(\frac{3+(-3)}{2}, \frac{-7+1}{2}\right) = \left(\frac{0}{2}, \frac{-6}{2}\right) = (0, -3)$	<p>8. <math>(2, 2), (6, 14)</math></p> $\left(\frac{2+6}{2}, \frac{2+14}{2}\right) = \left(\frac{8}{2}, \frac{16}{2}\right) = (4, 8)$
<p>9. <math>(0, -6), (-4, 9)</math></p> $\left(\frac{0+(-4)}{2}, \frac{-6+9}{2}\right) = \left(-\frac{4}{2}, \frac{3}{2}\right) = (-2, \frac{3}{2})$	<p>10. <math>(9, -2), (3, 6)</math></p> $\left(\frac{9+3}{2}, \frac{-2+6}{2}\right) = \left(\frac{12}{2}, \frac{4}{2}\right) = (6, 2)$
<p>11. <math>(-5, 8), (1, 6)</math></p> $\left(\frac{-5+1}{2}, \frac{8+6}{2}\right) = \left(-\frac{4}{2}, \frac{14}{2}\right) = (-2, 7)$	<p>12. <math>(-5, 4), (2, -4)</math></p> $\left(\frac{-5+2}{2}, \frac{4+(-4)}{2}\right) = \left(-\frac{3}{2}, \frac{0}{2}\right) = \left(-\frac{3}{2}, 0\right)$

13. The point  $(1, -12)$  is the midpoint of segment  $\overline{AB}$ . If the coordinates of point A are  $(3, 4)$ , find the coordinates of point B.

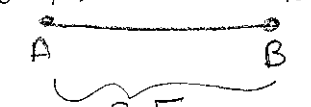
$(3, 4)$     $(1, -12)$     $(x_2, y_2)$   


$$\left(\frac{3+x_2}{2}, \frac{4+y_2}{2}\right) = (1, -12)$$

$$\begin{cases} \frac{3+x_2}{2} = 1 & \frac{4+y_2}{2} = -12 \\ 3+x_2 = 2 & 4+y_2 = -24 \\ x_2 = -1 & y_2 = -28 \end{cases}$$

$(-1, -28)$

14. If the distance between points A and B is  $3\sqrt{2}$  units and point A is  $(-2, 6)$ , find the values of x if point B is  $(x, 3)$ .

$(-2, 6)$     $(x, 3)$   


$$3\sqrt{2} = \sqrt{(x-(-2))^2 + (3-6)^2}$$

$$18 = (x+2)^2 + 9$$

$$9 = (x+2)^2$$

$$\pm 3 = x+2$$

$$x = 1 \quad x = -5$$

- Answers: 1)  $8\sqrt{2}$  2)  $5\sqrt{5}$  3)  $2\sqrt{10}$  4)  $12\sqrt{2}$  5)  $2\sqrt{13}$  6)  $\sqrt{85}$  7)  $(0, -3)$  8)  $(4, 8)$   
 9)  $(-2, 1.5)$  10)  $(6, 2)$  11)  $(-2, 7)$  12)  $(-1.5, 0)$  13)  $(-1, -28)$  14)  $x = 1$  or  $x = -5$