

Distance Formula

Sheet 2

Example: The distance between the points $(-1, 3)$ and $(k, -6)$ is 15 units.
Find the value of k .

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$15 = \sqrt{(k + 1)^2 + (-6 - 3)^2}$$

$$225 = (k + 1)^2 + (-9)^2 \Rightarrow 144 = (k + 1)^2 \Rightarrow \pm 12 = k + 1$$

$$\mathbf{k = -13 \text{ or } 11}$$

Find the unknown value with the given endpoints and distance between them.

- 1) $(6, -9)$, $(6, n)$, distance = 5 units

$$n = \underline{\hspace{2cm}}$$

- 3) $(z, -2)$, $(2, 6)$, distance = 13 units

$$z = \underline{\hspace{2cm}}$$

- 5) $(5, m)$, $(5, 3)$, distance = 4 units

$$m = \underline{\hspace{2cm}}$$

- 7) The endpoints of a line segment are $(-4, p)$ and the length is 17 units. Find the value of p .

$$p = \underline{\hspace{2cm}}$$

- 8) The endpoints of one of the sides of a square are $(0, b)$ and $(-4, 6)$. The length of the side is 5 units. Find the value of b .

$$b = \underline{\hspace{2cm}}$$

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