1.9.16

EE24BTECH11008 - Aslin Garvasis

Question:
Find the distance between the points (a, b) and $(-a, -b)$
Solution:

Variable	Description
$\mathbf{A}(a, b) = (8, 9)$	coordinates of first point
$\mathbf{B}(-a, -b) = (-8, -9)$	coordinates of second point
d	distance between $\mathbf{A}$ and $\mathbf{B}$

TABLE 0: Input parameters

$$d = \|\mathbf{A} - \mathbf{B}\| = \sqrt{(\mathbf{A} - \mathbf{B})^T (\mathbf{A} - \mathbf{B})} \tag{0.1}$$

$$\implies d = \sqrt{\begin{pmatrix} 2a & 2b \end{pmatrix} \begin{pmatrix} 2a \\ 2b \end{pmatrix}} \tag{0.2}$$

$$\implies d = \sqrt{4a^2 + 4b^2} \tag{0.3}$$

$$\implies d = 2\sqrt{a^2 + b^2} \tag{0.4}$$

$$\implies d = 2\sqrt{145} \tag{0.5}$$