When a handball strikes a vertical wall, its velocity changes from25 m/s [S15°E] to 30 m/s [S40°W]. Determine the handball's change in velocity.

Solution

$$\left|\overrightarrow{V_2} - \overrightarrow{V_1}\right| = \sqrt{\left|\overrightarrow{V_2}\right|^2 + \left|\overrightarrow{V_1}\right|^2 - 2\left|\overrightarrow{V_2}\right|\left|\overrightarrow{V_1}\right| \cos a} =$$

$$\sqrt{25^2 + 30^2 - 2 * 25 * 30 \ \cos(30 + 15)} = 21.5 \text{ m/s}$$

the handball's change in velocity 21.5 m/s S85°W

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