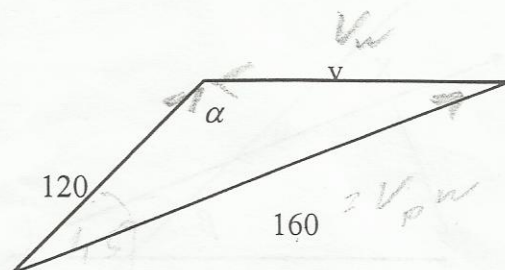2 (a) An aeroplane has a speed of 160 m/s in still air. When the wind blows from the east, the velocity of the aeroplane as observed from the ground is 120 m/s towards the north-east. Find the speed of the wind correct to two decimal places.

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$\alpha = 135°$ 5

$160^2 = 120^2 + v^2 - 2(120) v \cos 135$ 5

$25600 = 14400 + v^2 + 169.7056275 v$

$v^2 + 169.7056275 v - 11200 = 0$ 5

$$v = \frac{-169.7056275 + 271.2931993}{2}$$

$v = 50.79378592$

$v = 50.79$ m/s   5