Specimen P2 Q10

10. Two sound sources produce the waves \( y = \sin t \) and \( y = \sqrt{3} \cos t \).

An investigation into the addition of these two waves produces the graph shown, with equation \( y = k \cos(t - \alpha) \) for \( 0 \leq t \leq 2\pi \).

(a) Calculate the values of \( k \) and \( \alpha \).

The point P has a \( y \)-coordinate of 1.2.

(c) Hence calculate the value of the \( t \)-coordinate of point P.

Answers

(a) \( k = 2, \quad a = \frac{\pi}{6} \)

(b) 5.9