Solve the equation \( \sqrt{2} \cos x - \sqrt{3} \sin x = \sqrt{5}. \)

\[
\sqrt{2} \cos x - \sqrt{3} \sin x = \sqrt{5}
\]

\[
\sqrt{\frac{2}{5}} \cos x - \sqrt{\frac{3}{5}} \sin x = 1
\]

Let \( \alpha \in \left[0, \frac{\pi}{2}\right] \) be such that \( \cos \alpha = \sqrt{\frac{2}{5}}. \) Then \( \sin \alpha = \sqrt{\frac{3}{5}} \) and the above equation becomes

\[
\cos \alpha \cos x - \sin \alpha \sin x = 1
\]

\[
\cos (x + \alpha) = 1.
\]

Therefore we obtain that

\[
x + \alpha = 2k\pi
\]

\[
x = -\alpha + 2k\pi.
\]