

| Question | | Answer | Marks | AO | Guidance |
|----------|-----|--|-------|------|---|
| 6 | (a) | $\sin x \cos \frac{\pi}{6} + \cos x \sin \frac{\pi}{6}$ $= \cos x \cos \frac{\pi}{4} + \sin x \sin \frac{\pi}{4}$ | M1 | 2.1 | Using a compound angle formula at least once |
| | | $\frac{\sqrt{3}}{2} \sin x + \frac{1}{2} \cos x = \frac{\sqrt{2}}{2} \cos x + \frac{\sqrt{2}}{2} \sin x$ | M1 | 2.1 | Uses exact values for at least 2 trigonometric terms |
| | | $\sin x \left(\frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2} \right) = \cos x \left(\frac{\sqrt{2}}{2} - \frac{1}{2} \right)$ | M1 | 2.1 | Collecting terms and factorising |
| | | $\tan x = \frac{\sqrt{2} - 1}{\sqrt{3} - \sqrt{2}}$ | E1 | 2.1 | AG Complete argument with proper use of brackets where necessary |
| | | | [4] | | |
| 6 | (b) | $x = \frac{7\pi}{24}, \frac{31\pi}{24}$ | B1 | 1.1b | Allow for both values without working and no others in the range $0 \leq x \leq 2\pi$. Allow decimal equivalents 0.916, 4.06 or better |
| | | | [1] | | |