1 Phase in Quantum States

In quantum mechanics, it turns out that the overall phase for a state does not have any physical significance. Therefore, you will need to become quick at rearranging the phase of various states. For each of the vectors listed below, rewrite the vector as an overall complex phase times a new vector whose first component is real and positive.

$$|D\rangle \doteq \begin{pmatrix} 7e^{i\frac{\pi}{6}} \\ 3e^{i\frac{\pi}{2}} \\ -1 \end{pmatrix} \quad |E\rangle \doteq \begin{pmatrix} i \\ 4 \end{pmatrix} \quad |F\rangle \doteq \begin{pmatrix} 2+2i \\ 3-4i \end{pmatrix}$$