1. If the complex numbers $a$ and $b$ are defined by $a = 2 + 3i$ and $b = 3 + i$ compute:
   (a) $a + b$
   (b) $ab$
   (c) $a/b$
   (d) $|b|$
   (e) $\bar{b}$

2. (a) Rewrite $2e^{\pi(2+i)}$ in $a + bi$ format
   (b) Rewrite $2 + 2i$ in $ae^{i\theta}$ format

3. Find the roots of $2x^2 + 3x + 2$.

4. Assume that the coefficients $a_i$ are all real numbers. The polynomial $x^{21} + a_{20}x^{20} + \cdots + a_0$ has at least \ldots and no more than \ldots real roots. This polynomial has at least \ldots and no more than \ldots complex roots.

5. Factor $x^4 - x^3 - 4x^2 + 3x + 15$, given that it has a root at $x = 2 + i$.

6. Solve:

\[
\begin{align*}
2x + y &= 4 \\
x + 2y &= 5
\end{align*}
\]