Exercice 1.1.

$a = 3 + 4i$
$b = 2 - i$

a) $a + b = 3 + 4i + 2 - i = 5 + 3i$
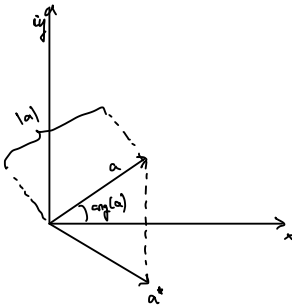
$ab = (3 + 4i)(2 - i) = 6 - 3i + 8i + 4 = 12 + 5i$

$1/a = 1/(3 + 4i) = \dfrac{3 - i4}{9 + 16} = \dfrac{3}{25} - i\dfrac{4}{25}$

$a^* = 3 - 4i$

$|a| = \sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25}$

$\psi = \begin{pmatrix} 3 + 4i \\ 2 - i \end{pmatrix}$; $\|\psi\| = \sqrt{\psi^T \cdot \psi} = \sqrt{(3 - 4i)(3 + 4i) + (2 - i)(2 + i)} = \sqrt{9 + 16 + 2 + 1} = \sqrt{28}$

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