



complex number: (standard form)

$a + bi$

a → real #
 b → imaginary #

Ex.1 Plot each complex number.

a. $2 + 3i$ b. $-4 + 2i$ c. $2 - 4i$ d. $-3 - i$ e. 5 f. $-3i$

A complex plane with a horizontal real axis and a vertical imaginary axis. Points are plotted as follows: a at $(2, 3)$, b at $(-4, 2)$, c at $(2, -4)$, d at $(-3, -1)$, e at $(5, 0)$, and f at $(0, -3)$.

Ex.2 Simplify

$\sqrt{-1} = i$
 $i^2 = -1$
 $i^3 = -i$
 $i^4 = 1$

memorize!

a. $i^7 = -i$ b. $i^{15} = -i$ c. $i^{54} = -1$

$4\sqrt[4]{\frac{7}{4}} \leftarrow i^3$ $4\sqrt[4]{\frac{15}{12}} \leftarrow i^3$ $4\sqrt[4]{\frac{54}{54}} \leftarrow i^3$

$\frac{4}{3} \leftarrow i^3$ $\frac{4}{3} \leftarrow i^3$ $\frac{2}{2} \leftarrow i^2$

Ex.3 Simplify

a. $\sqrt{-4} = 2i$
 b. $\sqrt{-25} = 5i$
 c. $3\sqrt{-16} = 3 \cdot 4i = 12i$
 d. $\sqrt{\frac{-4}{9}} = \frac{2}{3}i$
 e. $\sqrt{-18} = \sqrt{9 \cdot \sqrt{2}} = 3i\sqrt{2}$
 f. $\sqrt{64} + \sqrt{-63} = 8 + \sqrt{9 \cdot \sqrt{7}} = 8 + 3i\sqrt{7}$
 g. $-\sqrt{25} + 7 = -5 + 7 = 2$