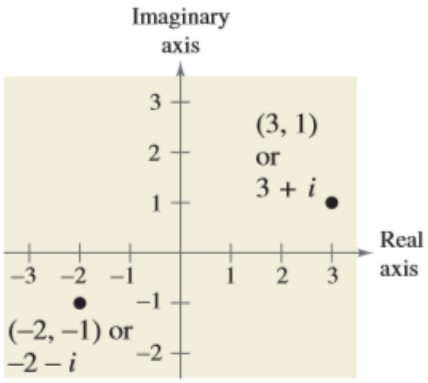
6.5 The complex plane



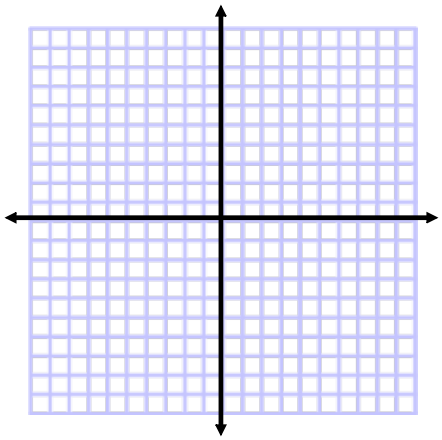
A complex number $z = a + bi$ can be represented by a point (a, b) in a complex coordinate plane.

$z = a + bi$

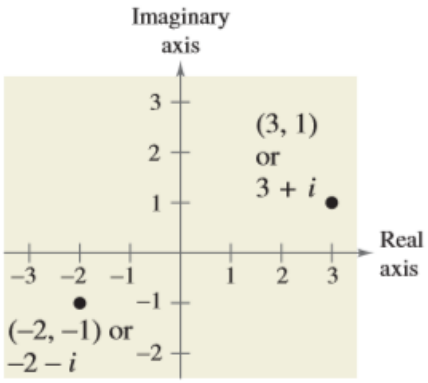
$|z| = \sqrt{a^2 + b^2}$

Absolute value of a complex number is just the magnitude.

Plot $z = -2 + 5i$ in the complex plane and find its absolute value.



6.5 The complex plane



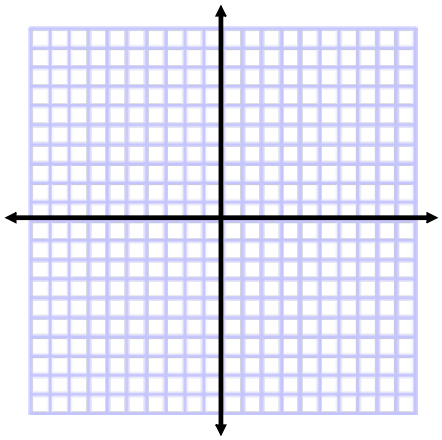
A complex number $z = a + bi$ can be represented by a point (a, b) in a complex coordinate plane.

$z = a + bi$

$|z| = \sqrt{a^2 + b^2}$

Absolute value of a complex number is just the magnitude.

Plot z in the complex plane and find its absolute value.

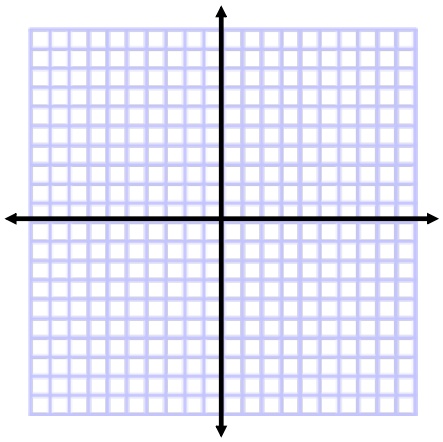


$z = -2 + 5i$

$z = 3 - 4i$

Complex numbers can be added algebraically as well as graphically.

$z = a + bi \longrightarrow \mathbf{u} = \langle a, b \rangle$



Find the sum of (1 + 3i) + (2 + i) algebraically and graphically.

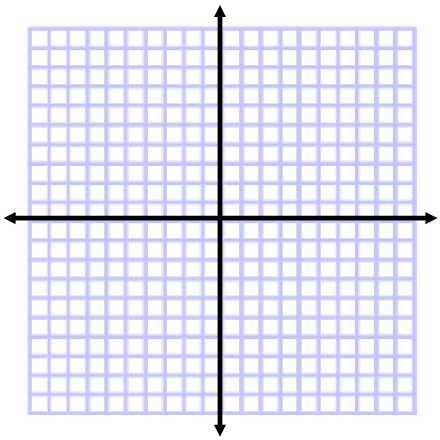
graphically: vectors

algebraically

$\mathbf{u} = \langle 1, 3 \rangle$

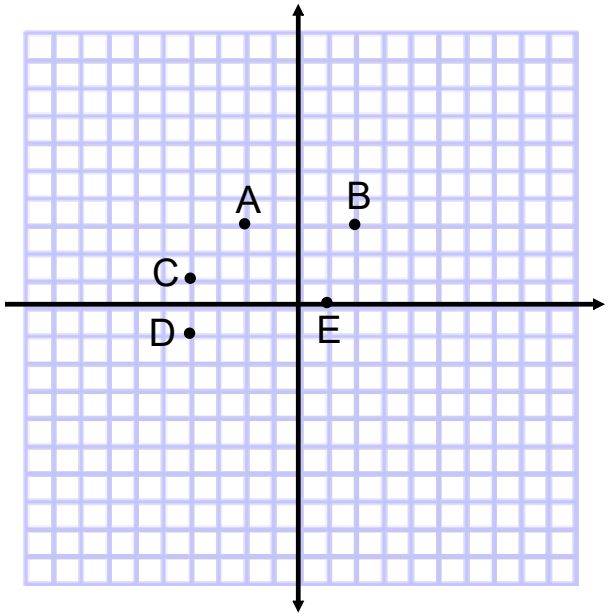
$\mathbf{v} = \langle 2, 1 \rangle$

Find the sum of (4 + 2i) - (3 - i) algebraically and graphically.



Complex conjugate

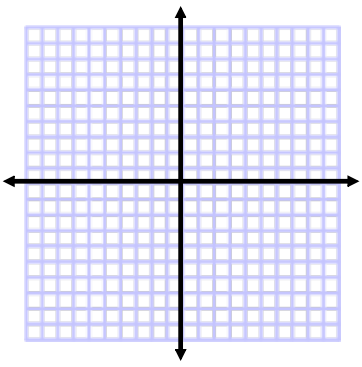
If $z = a + bi$ its conjugate is $\bar{z} = a - bi$



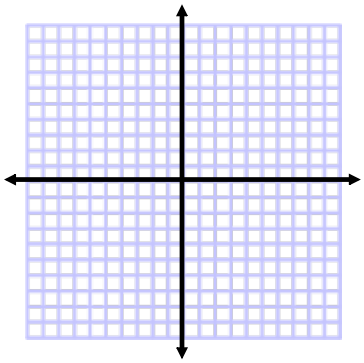
Which two points on the complex plane above are conjugates of each other?

Find the distance between the complex numbers in the complex plane.

$-5 + i$, $-2 + 5i$

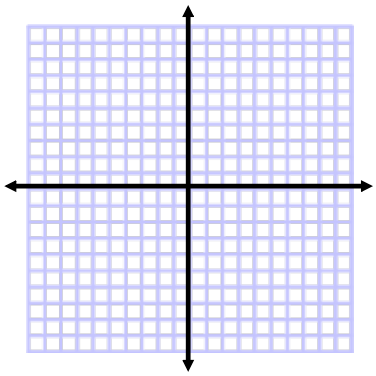


$-7 - 3i$, $3 + 5i$

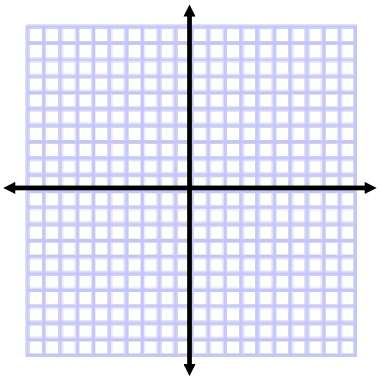


Find the midpoint of the line segment joining the points corresponding to the complex numbers in the complex plane.

$4 - 3i$, $2 + 2i$



$2 + i$, $5 - 5i$



Section 6.5 Pgs. 443-444

#7-14, 15-35 odd (both graphically and algebraically),

37 - 43 odd, 45-47, 49, 56