The square root of a complex number (a + bi)

 Learning outcomes Write a complex number in polar form, and solving complex problems in a polar form

Intended destination   Find the square root of a complex number (a + bi)

Name .... Class. ....No........................

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The square root of $z = a \pm bi$ that is $\pm\left(\sqrt{\frac{r+a}{2}} \pm \sqrt{\frac{r-a}{2}}\,i\right)$ $r=|z|=\sqrt{a^2+b^2}$

Done already.

 Find the square root of a complex number a + bi.

Sample $z = -2 - 2\sqrt{3}i$

 $a = -2$, $r = \sqrt{(-2)^2 + (-2\sqrt{3})^2}$ $r = \sqrt{4+12} = \sqrt{16} = 4$

$\pm\sqrt{z} = \pm\sqrt{(-2-2\sqrt{3}i)}$

$= \pm\left(\sqrt{\frac{4+(-2)}{2}} - \sqrt{\frac{4-(-2)}{2}}i\right)$

$= \pm\left(1 - \sqrt{3}i\right)$

No	$z = a \pm bi$	a	$r=|z|$	Answer
1	z = -5+12i	-5	$\sqrt{(-5)^2+12^2} = 13$	$\pm$ (2+3i)
2	z = -15-8i			
3	z = -3-4i			
4	z = 5-12i			
5	z = 12-5i			
6	z = $1+2\sqrt{2}i$			
7	z = 6+8i			
8	z = $-4-4\sqrt{3}i$			
9	z = $3+3\sqrt{3}i$			
10	z = $\sqrt{2} - \sqrt{2}i$			

Summary score

Score 10 points made .... points

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