

Bellwork Alg 2A Friday, May 5, 2017

For each problem two roots of a cubic are given. Find the third root then write the equation of this cubic in STANDARD FORM.

1. Two of the roots are -4 and $\sqrt{5}$ Third root is:

Eq of the cubic in STANDARD FORM:

2. Two of the roots are 9 and $-2i$ Third root is:

Eq of the cubic in STANDARD FORM:

3. Two of the roots are 2 and $3 + 2i$ Third root is:

Eq of the cubic in STANDARD FORM:

4. Two of the roots are 2 and $1 - \sqrt{3}$ Third root is:

Eq of the cubic in STANDARD FORM:

For each problem two roots of a cubic are given. Find the third root then write the equation of this cubic in STANDARD FORM.

1. Two of the roots are -4 and $\sqrt{5}$

Third root is: $-\sqrt{5}$

Eq of the cubic in STANDARD FORM:

-4 comes from the factor $(x+4)$
 $\sqrt{5}$ & $-\sqrt{5}$ come from the factor (x^2-5)

	x	$+4$
x^2	x^3	$+4x^2$
-5	$-5x$	-20

$$x^3 + 4x^2 - 5x - 20$$

2. Two of the roots are 9 and $-2i$

Third root is: $2i$

Eq of the cubic in STANDARD FORM:

9 comes from the factor $(x-9)$
 $2i$ & $-2i$ come from the factor (x^2+4)

	x	-9
x^2	x^3	$-9x^2$
$+4$	$+4x$	-36

$$x^3 - 9x^2 + 4x - 36$$

3. Two of the roots are 2 and $3+2i$

Third root is: $3-2i$

Eq of the cubic in STANDARD FORM:

2 comes from the factor $(x-2)$

$3+2i$ comes from the factor $(x-(3+2i))$
 $= (x-3-2i)$

$3-2i$ comes from the factor $(x-(3-2i))$
 $= (x-3+2i)$

	x	-3	$-2i$
x	x^2	$-3x$	$-2ix$
-3	$-3x$	$+9$	$+6i$
$+2i$	$+2ix$	$-6i$	$-4i^2 = +4$

$$= x^2 - 6x + 13$$

	x^2	$-6x$	$+13$
x	x^3	$-6x^2$	$+13x$
-2	$-2x^2$	$+12x$	-26

$$= x^3 - 8x^2 + 25x - 26$$

4. Two of the roots are 2 and $1-\sqrt{3}$

Third root is: $1+\sqrt{3}$

Eq of the cubic in STANDARD FORM:

2 comes from the factor $(x-2)$

$1-\sqrt{3}$ comes from the factor $(x-(1-\sqrt{3}))$
 $= (x-1+\sqrt{3})$

$1+\sqrt{3}$ comes from the factor $(x-(1+\sqrt{3}))$
 $= (x-1-\sqrt{3})$

	x	-1	$+\sqrt{3}$
x	x^2	$-x$	$+x\sqrt{3}$
-1	$-x$	$+1$	$-\sqrt{3}$
$-\sqrt{3}$	$-x\sqrt{3}$	$+1$	-3

$$= x^2 - 2x - 2$$

	x^2	$-2x$	-2
x	x^3	$-2x^2$	$-2x$
-2	$-2x^2$	$+4x$	$+4$

$$= x^3 - 4x^2 + 2x + 4$$