Algebra 2 Bellwork Thursday, December 4, 2014

Find all EXACT solutions, real and imaginary, of each polynomial equation.

1. $7x^3 - 2x^2 + 21x - 6 = 0$

2. $x^3 - 3x^2 - 13x + 15 = 0$

3. $1296x^4 - 625 = 0$

Use the following formulas to factor each.

Difference of Perfect Cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Sum of Perfect Cubes:: $a^3 + b^3 = (a + b)(a^2 + -ab + b^2)$

4. $w^3 - 125$

5. $g^3 + 64$

Algebra 2 Bellwork Thursday, December 4, 2014 Answers

Find all EXACT solutions, real and imaginary, of each polynomial equation.

1. $7x^3 - 2x^2 + 21x - 6 = 0$

	$7x$	-2
x^2	$7x^3$	$-2x^2$
$+3$	$+21x$	-6

$(7x-2)(x^2+3)=0$

$x = 2/7, \pm i\sqrt{3}$

$x^2+3=0$

$\sqrt{x^2}=\sqrt{-3}$

$x = \pm i\sqrt{3}$

2. $x^3 - 3x^2 - 13x + 15 = 0$

	x	-3
x^2	x^3	$-3x^2$
-13	$-13x$	$+15$

THESE DON'T MULT TO +15!

CAN'T FACTOR THIS WAY, USE A GRAPH.

$x = -3, 1, 5$

3. $1296x^4 - 625 = 0$

$(36x^2+25)(36x^2-25)$

$(36x^2+25)(6x+5)(6x-5)$

$36x^2+25=0$

$36x^2=-25$

$x^2 = -25/36$

$x = \pm 5/6, \pm i\,5/6$

Use the following formulas to factor each.

Difference of Perfect Cubes: $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Sum of Perfect Cubes:: $a^3 + b^3 = (a + b)(a^2 + -ab + b^2)$

4. $w^3 - 125$

$w^3 - (5)^3 \rightarrow a = w,\ b = 5$

$(w-5)(w^2+5w+25)$

5. $g^3 + 64$

$g^3 + (4)^3 \rightarrow a = g,\ b = 4$

$(g+4)(g^2-4g+16)$