Algebra 2 Bellwork Friday, December 5, 2014

Find all solutions to each polynomial using factoring as the main tool. Give EXACT solutions.
Here are some formulas you might need:

$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $a^3 + b^3 = (a+b)(a^2 - ab + b^2)$ $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

1. $6x^3 - 864x = 0$

2. $2x^5 - 162x = 0$

3. $4x^3 - 12x^2 - 40x = 0$

4. $x^4 - 4x^2 - 45 = 0$

5. $8x^3 + 125 = 0$

6. $x^3 + 5x^2 - 3x - 15 = 0$

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1. $6x^3 - 864x = 0$

$6x(x^2 - 144) = 0$

$6x(x+12)(x-12) = 0$

$x = 0, \pm 12$

2. $2x^5 - 162x = 0$

$2x(x^4 - 81) = 0$

$2x(x^2+9)(x^2-9) = 0$

$2x(x^2+9)(x+3)(x-3) = 0$

$x = 0, \pm 3, \pm 3i$

3. $4x^3 - 12x^2 - 40x = 0$

$4x(x^2 - 3x - 10) = 0$

$4x(x-5)(x+2) = 0$

$x = 0, -2, 5$

-45

-4

4. $x^4 - 4x^2 - 45 = 0$

$(x^2 - 9)(x^2 + 5) = 0$

$(x+3)(x-3)(x^2+5) = 0$

$x = \pm 3, \pm i\sqrt{5}$

5. $8x^3 + 125 = 0$

$(2x)^3 + (5)^3 = 0$

$(2x+5)(4x^2 - 10x + 25) = 0$

$x = -5/2$

$b^2 - 4ac = -300$

$x = \dfrac{10 \pm \sqrt{-300}}{8} = \dfrac{10 \pm 10i\sqrt{3}}{8} = \dfrac{5 \pm 5i\sqrt{3}}{4}$

$x = -5/2, \ \dfrac{5 \pm 5i\sqrt{3}}{4}$

6. $x^3 + 5x^2 - 3x - 15 = 0$

	x	$+5$
x^2	x^3	$+5x^2$
-3	$-3x$	-15

$(x^2 - 3)(x + 5) = 0$

$x = -5, \pm\sqrt{3}$