R3 Day 3

Thursday, November 12, 2015 6:21 AM

perfect cubes:

$2^3 = 8$ $4^3 = 64$ $3^3 = 27$

$5^3 = 125$ $6^3 = 216$ $10^3 = 1000$

Solve for x:

1. $4^3 = x$ 64
2. $6^3 = x$ 216
3. $10^3 = x$ 1000
4. $2^3 = x$ 8
5. $x^3 = 125$ 5
6. $x^3 = 27$ 3
7. $x^3 = -216$ -6
8. $x^3 = -8$ -2
9. $x^3 = -64$ -4

Expand: $(x+2)(x^2 - 2x + 4) = x^3 - 2x^2 + 4x + 2x^2 - 4x + 8$

$= x^3 + 8$

$x^3 + 8 = (x+2)(x^2 - 2x + 4)$

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$x^3 - 64 = (x-4)(x^2 + 4x + 16)$

Sum and difference of perfect cubes.

Factor x^3+8.

Factor x^3-125.

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

$$x^{18}-125y^{30} = (x^6)^3-(5y^{10})^3$$

$$= (x^6-5y^{10})(x^{12}+5x^6y^{10}+25y^{20})$$

Factor $x^{12}+y^{24}$.

Factor completely:

① a^3+b^3 $(a+b)(a^2-ab+b^2)$

② a^3-b^3 $(a-b)(a^2+ab+b^2)$

③ z^3+64 $(z+4)(z^2-4z+16)$

④ $64 - z^3$

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

⑤ $x^{18} - y^{24}$

$(x^6)^3 - (y^8)^3$

$= (x^6 - y^8)(x^{12} + x^6y^8 + y^{16})$

⑥ $125x^3y^6 + 27z^9$

$(5xy^2)^3 + (3z^3)^3$

$= (5xy^2 + 3z^3)(25x^2y^4 - 15xy^2z^3 + 9z^6)$

Factor by grouping:

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

$x^2(x+5) - 4(x+5)$

$(x+5)(x^2-4)$

$(x+5)(x-2)(x+2)$

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

$x(x^2-4) + 5(x^2-4)$

$(x^2-4)(x+5)$

$(x-2)(x+2)(x+5)$

you try:

⑦ $2x^3 - 6x^2 + 6x - 18$

⑧ $x^3 + 4x^2 - 9x - 36$