

Algebra II 6-4 Factoring Polynomials
 Review - Factoring Difference of Squares:

$\sqrt{a^2 - 9}$ $8y^3 - 72y$ $49x^2 - 81$

$(a-3)(a+3)$ $8y(y^2-9)$ $(7x+9)(7x-9)$

$8y(y+3)(y-3)$

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Sum of Cubes

But first, review multiplying the following: $(x+4)(x^2-4x+16)$

Perfect Cubes

$1^3 = 1$
 $2^3 = 8$
 $3^3 = 27$
 $4^3 = 64$
 $5^3 = 125$
 $6^3 = 218$

$x^3 - 4x^2 + 16x + 4x^2 - 16x + 64$

$x^3 + 64$

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

$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$

(Formula on pg. 431)

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Sum of Cubes

$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$

Ex. 1 Factor $x^3 + 125$

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

$2x(x^3+27)$

Ex. 2 Factor $2x^4 + 54x$

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

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Difference of Cubes

Review Again by multiplying the following: $(x-4)(x^2+4x+16)$

Perfect Cubes

$1^3 = 1$
 $2^3 = 8$
 $3^3 = 27$
 $4^3 = 64$
 $5^3 = 125$
 $6^3 = 218$

$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

(Formula on pg. 431)

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

Ex. 3 Factor $27x^3 - 8$
 $(3x - 2)(9x^2 + 6x + 4)$
sq sq

Ex. 4 Factor $4x^3 - 108x$
 $4x(x^3 - 27)$
 $4x(x - 3)(x^2 + 3x + 9)$

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Factoring by Grouping

$f(x) = (x^3 + 4x^2) + (4x + 16)$ $f(x) = x^3 - 2x^2 + 4x - 8$
 $x^2(x+4) + 4(x+4)$
 $(x+4)(x^2+4)$

$f(x) = (x^3 - x^2) + (25x + 25)$ $f(x) = x^3 + 3x^2 - 4x - 12$
 $x^2(x-1) - 25(x-1)$
 $(x-1)(x^2 - 25)$
 $(x-1)(x-5)(x+5)$

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$f(x) = x^4 + x^2 - 6$ $\frac{-6}{-2 \cdot 3}$ |
 $(x^2 - 2)(x^2 + 3)$

$f(x) = 2x^4 + x^2 - 1$ $\frac{-2}{2 \cdot -1}$ |
replace
 $(2x^4 + 2x^2) - (x^2 - 1)$
 $2x^2(x^2 + 1) - 1(x^2 - 1)$
 $(x^2 + 1)(2x^2 - 1)$

Dec 6-10:47 AM

Conclusion

- How do we factor a cube?
 Equation 1 ($\sqrt{x} + \sqrt{\#}$)
 Equation 2
- What about factoring an x^4 ?
- Other Questions????

Nov 24-11:27 AM

Assignment:
pg. 433: #4-7, 10-14

Nov 14-7:50 PM