Warm-up

Factor

① x^2+5x+6

$1\cdot 6 \quad -1\cdot -6$

$2\cdot 3 \quad -2\cdot -3$

$(x+2)(x+3)$

② $16x^2-49$

$1x\cdot 16x \quad 1\cdot -49 \quad -1\cdot 49$

$2x\cdot 8x \quad 7\cdot -7 \quad -7\cdot 7$

$4x\cdot 4x$

$(4x+7)(4x-7)$

$28x$

$-28x$

0

③ $5x^2-14x-3$

$1x\cdot 5x \quad 1\cdot -3 \quad -1\cdot 3$

$(1x-3)(5x+1)$

$-15x$

$1x$

$-14x$

5.4 Factor & Solve Polynomials

* Greatest Common Factor

① $x^3 + 2x^2 - 15x$ (÷x, ÷x, ÷x)

GCF: x

$x\left(\frac{x^2}{x \cdot x} + 2x - \frac{15}{\begin{matrix}1 \cdot -15 \\ 3 \cdot -5\end{matrix}\} \begin{matrix}-1 \cdot 15 \\ -3 \cdot 5\end{matrix}}\right)$

$x(x-3)(x+5)$

1st - Check if any # in common (nope!)

Check if any Variable in each (yes, all have 1x)

2nd - Check if stuff left over can be factored.

② $2y^5 - 18y^3$ ÷ $2y^3$ ÷ $2y^3$

Common: $2y^3$

GCF: $2y^3$

$2y^3(y^2 - 9)$

$y \cdot y$

$1 \cdot -9$ $-1 \cdot 9$

$3 \cdot -3$ $-3 \cdot 3$

$2y^3(y+3)(y-3)$ ☺

Perfect Cubes

$1^3 = 1 \rightarrow \sqrt[3]{1} = 1$

$2^3 = 8 \rightarrow \sqrt[3]{8} = 2$

$3^3 = 27 \rightarrow \sqrt[3]{27} = 3$

$4^3 = 64 \rightarrow \sqrt[3]{64} = 4$

$5^3 = 125 \rightarrow \sqrt[3]{125} = 5$

$6^3 = 216 \rightarrow \sqrt[3]{216} = 6$

$7^3 = 343 \rightarrow \sqrt[3]{343} = 7$

$8^3 = 512 \rightarrow \sqrt[3]{512} = 8$

$9^3 = 729 \rightarrow \sqrt[3]{729} = 9$

$10^3 = 1000 \rightarrow \sqrt[3]{1000} = 10$

Dealing w/ Sum & Diff of Perfect Cubes

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

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

(a−b) are cube roots

$x^3 + 64$

a= b=

$8x^3 - 27$

a= b=