GCF Homework

#1 $x^3 - 5x^2 = 0$

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

$x = 0$ $x = 5$

#2 $9x^2 - 18x = 0$

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

$x = 0$ $x = 2$

ROOTS or Solutions

#3 $3x^3 - 15x^2 = 0$

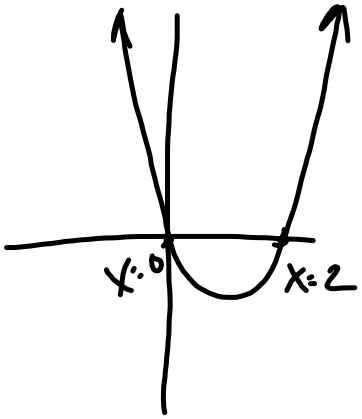
$(3x^2)(x-5) = 0$

$x = 0$ $x = 5$

#4 $8x^3 - 12x^2 = 0$

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

$x = 0$ $x = \frac{3}{2}$



Difference of 2 squares

$\sqrt{-1} = i$

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

#5 $x^4 - 1 = 0$

$(x^2 \cdot x^2)\ (1 \cdot 1)$

$(x^2+1)(x^2-1) = 0$

$x^2+1=0$

$\sqrt{x^2} = \sqrt{-1}$

$x = \pm i$

$x^2-1=0$

$\sqrt{x^2} = \sqrt{1}$

$x = \pm 1$

#6 $x^4 - 256 = 0$

$x^2 \cdot x^2 \quad 16 \cdot 16$

$(x^2+16)(x^2-16) = 0$

$x^2+16=0$

$-16 \quad -16$

$\sqrt{x^2} = \sqrt{-16}$

$x = \pm 4i$

$x^2-16=0$

$x^2 = 16$

$x = \pm 4$

#7 $x^4 - 625 = 0$

$x^2 \cdot x^2 \quad 25 \cdot 25$

$(x^2+25)(x^2-25) = 0$

$x^2+25=0$

$\sqrt{x^2} = \sqrt{-25}$

$x = \pm 5i$

$x^2-25=0$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

#8 $2x^4 - 8 = 0$

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

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

$x^2-2=0$

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

$x = \pm\sqrt{2}$

$x^2+2=0$

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

$x = \pm i\sqrt{2}$

M: Factoring 2 terms
3 term poly.

TU: Factor 3 term
Review 2 term

W. Checkpoint 2 terms

TH: Review 3 & 4 term

F Quiz

Sum of 2 cubes
Difference

SAME – OPP. – plus

$a^3 + b^3 = 0 = (a+b)(a^2-ab+b^2)$

$a^3 - b^3 = 0 = (a-b)(a^2+ab+b^2)$

#9 x^3+1

$x\cdot x\cdot x$ $1\cdot 1\cdot 1$

$a=x$ $b=1$

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

$(x+1)(x^2-x+1)=0$

#10 $x^3-216=0$

$x\cdot x\cdot x$ $6\cdot 6\cdot 6$

$a=x$ $b=6$

same · opp · plus

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

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

x^3+27 ; x^3-8

Notes

x^3+27

$x\cdot x\cdot x$ $3\cdot 3\cdot 3$

$a=x$ $b=3$

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

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

S O AP

x^3-8

$x\cdot x\cdot x$ $2\cdot 2\cdot 2$

$x=a$

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

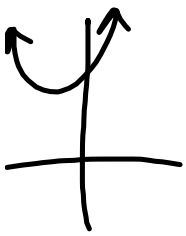
$(x-2)(x^2+2x+4)$

x^3+64

$x\cdot x\cdot x$ $4\cdot 4\cdot 4$

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

$(x+4)(x^2-4x+16)=0$



$x+4=0$

$\boxed{x=-4}$

~~Factor~~ ~~Graph~~ IMAG solutions

quad. form

complet the []

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$=\frac{4\pm\sqrt{(-4)^2-4(1)(16}}{2}$$

$$x=\frac{4\pm\sqrt{-48}}{2}=\boxed{\frac{4\pm i\sqrt{48}}{2}}$$

x^3-343

$x\cdot x\cdot x$ $7\cdot 7\cdot 7$

$(x-7)(x^2+7x+49)=0$

$x-7=0$

$\boxed{x=7}$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$=\frac{-7\pm\sqrt{7^2-4(1)(49)}}{2}$$

$x^3-343=0$

$x\cdot x\cdot x \quad 7\cdot 7\cdot 7$

$a=x \quad b=7$

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

$(x-7)(x^2+7x+49)=0$

$x-7=0$

$+7 \quad +7$

$\boxed{x=7}$

$x^2+7x+49=0$

$a=1 \quad b=7 \quad c=49$

$x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

$=\dfrac{-7\pm\sqrt{(7)^2-4(1)(49)}}{2}$

$=\dfrac{-7\pm\sqrt{-147}}{2}$

$=\boxed{\dfrac{-7\pm i\sqrt{147}}{2}}$

HW

$x^3+125=0$

$x^3-64=0$

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

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

SAME — opposite — always positive

SOAP

#9. x^3+1

$x\cdot x\cdot x$ $\quad 1\cdot 1\cdot 1$

$a=x$ $\quad b=1$

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

$$(x+1)(x^2-x+1)$$

#10 x^3-216

FACTOR

$(x\cdot x\cdot x)-(6\cdot 6\cdot 6)$

$a=x \quad b=6$

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

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

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x^3+27

$(x\cdot x\cdot x)$, $(3\cdot 3\cdot 3)$

$x=a$ $\quad 3=b$

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

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

x^3-8

$x\cdot x\cdot x$ $\quad 2\cdot 2\cdot 2$

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

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

Solve:

$x^3+64=0$

$x\cdot x\cdot x$ $\quad 4\cdot 4\cdot 4$

$a=x$ $\quad b=4$

Step 1: Factor

Step 2: set each factor = 0

$(x+4)(x^2-4x+16)=0$

$x+4=0$

$-4 \quad -4$

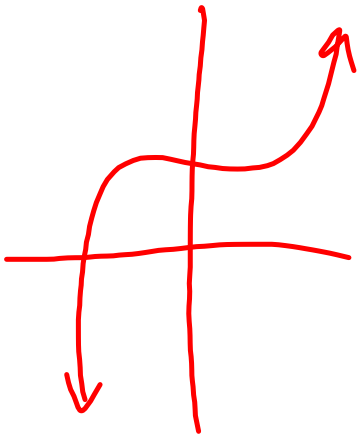
$\boxed{x=-4}$

$x^2-4x+16=0$

$a=1 \quad b=-4 \quad c=16$

~~Factor~~ graph

complete the [] quad form.



$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-(-4)\pm\sqrt{(-4)^2-4(1)(16}}{2(1)}$$

$$=\frac{4\pm\sqrt{-48}}{2}$$

$$\boxed{x=\frac{4\pm i\sqrt{48}}{2}}$$

SOLVE:

$x^3 - 343 = 0$

$(x \cdot x \cdot x) - (7 \cdot 7 \cdot 7)$

$a = x \quad b = 7$

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

$(x-7)(1x^2+7x+49)=0$

$x-7=0$

$+7 \quad +7$

$\boxed{x=7}$

USE quad. formula

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-7 \pm \sqrt{(7)^2-4(1)(49}}{2}$

$x = \frac{-7 \pm \sqrt{-147}}{2}$

two imaginary answers

$\boxed{x = \frac{-7 \pm i\sqrt{147}}{2}}$

HW: SOLVE

$x^3+125=0$ $x^3-64=0$