Alg. 1 BE | Monday 2-1-10

① $\frac{1}{2} + \frac{1}{3} = ?$

② $\frac{1}{x} + \frac{1}{y} = ?$

Tip: Study how you did #1

③ $\frac{1}{a} + \frac{1}{4a^2} = ?$

④ $\frac{-c}{a} + \frac{b^2}{4ac} = ?$

⑤ $\sqrt{\frac{4}{9}} = ?$

⑥ $\pm\sqrt{49} = ?$

⑦ Solve: $x^2 = 121$

- Exam 1 Thursday (Weds if Thurs. conflicts)

A NOTE ABOUT RADICALS $\Rightarrow \sqrt{}$

$$\sqrt{\frac{4}{9}} = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$$

LOOK, you CAN change $\frac{\sqrt{x}}{\sqrt{y}}$ to $\sqrt{\frac{x}{y}}$ OR BACK $\frac{\sqrt{x}}{\sqrt{y}}$

ALSO: $x^2 = 100$

$$\sqrt{x^2} = \sqrt{100}$$

$$\boxed{x = \pm 10}$$

* WHEN YOU SOLVE AN EQUATION BY $\sqrt{}$ BOTH SIDES, YOUR ANSWER will be $\pm$ NOT just +

CK: $(-10)^2 = 100$ ✓ CK $(10)^2 = 100$ ✓

RECALL OUR 3 SPECIAL PATTERNS FROM Ch. 8-8 YOU ARE SUPPOSED TO KNOW COLD:

① $(a+b)^2 = (a+b)(a+b) = a^2 + 2ab + b^2$

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

③ $(a+b)(a-b) = a^2 - b^2$ DIFFERENCE OF SQUARES (DOS)

JUST LIKE 16 IS CALLED A PERFECT SQUARE BECAUSE $\sqrt{16} = 4$ OR $4 \cdot 4 = 16$

THE FIRST TWO TRINOMIAL $a^2 \pm 2ab + b^2$ ARE CALLED PERFECT SQUARE TRINOMIALS BECAUSE $\sqrt{a^2 \pm 2ab + b^2} = a \pm b$ OR $(a \pm b)(a \pm b) = a^2 \pm 2ab + b^2$

THE DISCRIMINANT OF A PERFECT SQUARE TRINOMIAL IS ZERO. THAT IS, $b^2 - 4ac = 0$
IT IS FACTORABLE, THE FACTORS WILL BE IDENTICAL.

THE long WAY:

Solve $x^2+6x+9=0$

sum ⇒ 6

prod ⇒ 9

$+3$ $+3$

b^2-4ac

$(6)^2-4(1)(9)$

$36-36=0$

Since $a=1$

$(x+3)(x+3)=0$

$x=\{-3\}$

"TWO ANSWERS" to A second degree EQUATION, BOTH ARE THE SAME.

SHORT WAY:

Solve $x^2+6x+9=0$

① perfect sq.? Yes, $\sqrt{x^2}=x$

② perfect sq.? Yes, $\sqrt{9}=3$

③ Is $6x=2(x)(3)$? ✓

"2a b"

Use PATTERN:

$(x+3)(x+3)=0$

$(a+b)(a+b)$

$x=\{-3\}$

Ex 1b Pg 509 Solve $9y^2 - 12y + 4 = 0$

CK for GCF 1st!

$\sqrt{9y^2} = 3y$ $\sqrt{4} = 2$

$2 \cdot 3y \cdot 2$ ✓

$(3y-2)(3y-2) = 0$

$y = \left\{\frac{2}{3}\right\}$

Ex 1a Pg 509 Solve $16x^2 + 32x + 64 = 0$

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

$\sqrt{x^2} = x$ ✓ $\sqrt{4} = 2$ ✓

$2 \cdot x \cdot 2$ NO

Try Sum ⇒ 2
Prod ⇒ 4

? ? Is it prime?

$a = 1$
$b = 2$
$c = 4$

$b^2 - 4ac$

$(2)^2 - 4(1)(4)$

$4 - 16 = -12$ NO Real Solution!

Ex Pg 502 Solve $N^2 - 25 = 0$

$\sqrt{N^2}$ | $\sqrt{25}$

N $-$ 5

DIFFERENCE

$(N-5)(N+5) = 0$

$\boxed{N = \{5, -5\}}$

OR

$N^2 - 25 = 0$

$N^2 = 25$

$\sqrt{N^2} = \pm\sqrt{25}$

$\boxed{N = \pm 5}$

Ch. 9-5 Factoring $a^2 - b^2$ DOS's

Ch 9-6 Factoring $a^2 \pm 2ab + b^2$ PST's

- Homework: Pg 518 # 53-55
  51, 61, 63.