Algebra I | Monday 4-15-13 | Class Notes

Ch. 8-6 Solving Quadratic Equations By Factoring

IF they are factorable

Steps: ① Put in Standard Form

$$ax^2+bx+c=0$$

② Factor GCF if there is one

$$\text{GCF}(ax^2+bx+c)=0$$

③ Factor the quadratic trinomial using Magic Number method

$$\text{GCF}(ax^2+bx+c)=0$$

sum = b
prod = ac

$$\text{GCF}(\text{binomial})(\text{binomial})=0$$

④ Find solutions using ZPP *

⑤ Check solutions

* ZPP = Zero Product Property

$ab=0$

$a=0$ or $b=0$

(Ex) $4x^2 = -10x + 6$

$4x^2 + 10x - 6 = 0$

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

sum = b = 5

prod = ac = −6

$-1x + 6x$

$(2x^2 - 1x) + (6x - 3)$

$x(2x-1) + 3(2x-1)$

$2[(2x-1)(x+3)] = 0$

ZPP ZPP

$\boxed{x = \{\frac{1}{2}, -3\}}$

CK $x = \frac{1}{2}$

$4(\ )^2 \stackrel{?}{=} -10(\ ) + 6$ ✓

$4(\frac{1}{2})^2 \stackrel{?}{=} -10(\frac{1}{2}) + 6$

$4(\frac{1}{4}) \stackrel{?}{=} -5 + 6$

$1 \stackrel{?}{=} 1$ ✓

CK $x = 3$

$4(\ )^2 \stackrel{?}{=} -10(\ ) + 6$

$4(-3)^2 \stackrel{?}{=} -10(-3) + 6$

$4(9) \stackrel{?}{=} 30 + 6$

$36 = 36$ ✓

(1) $16 + 24a = -5a^2$

SF

GCF = ?

$5a^2 + 24a + 16 = 0$

sum = 24

prod = 80

MAGIC NUMBER

$+4 \quad +20$

$(5a^2 + 4a) + (20a + 16) = 0$

$a(5a + 4) + 4(5a + 4) = 0$

$(5a+4)(a+4) = 0$

FACTORS ZPP

$a = \left\{-\frac{4}{5}, -4\right\}$

CKS.

CK $a = -\frac{4}{5}$

$16 + 24\left(-\frac{4}{5}\right) \stackrel{?}{=} -5\left(-\frac{4}{5}\right)$

$16 - \frac{96}{5} \stackrel{?}{=} -5\left(\frac{16}{25}\right)$

$\frac{80}{5} - \frac{96}{5} \stackrel{?}{=} -\frac{16}{5}$ ✓

CK $a = -4$

$16 + 24(-4) \stackrel{?}{=} -5(-4)^2$

$16 - 96 \stackrel{?}{=} -5(16)$

$-80 \stackrel{?}{=} -80$ ✓

⑦ $0 = -2x^2 - 6 + 7x$

$2x^2 - 7x + 6 = 0$

sum $= b = -7$

prod $= ac = 12$

$-3, -4$

$(2x^2 - 3x) + (-4x + 6) = 0$

$x(2x - 3) + -2(2x - 3) = 0$

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

$\boxed{x = \{\frac{3}{2}, 2\}}$

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

$0 \stackrel{?}{=} -2(\frac{3}{2})^2 - 6 + 7(\frac{3}{2})$

$0 \stackrel{?}{=} -2(\frac{9}{4}) - 6 + \frac{21}{2}$

$0 \stackrel{?}{=} -\frac{9}{2} - \frac{12}{2} + \frac{21}{2}$ ✓

CK $x = 2$

$0 \stackrel{?}{=} -2(2)^2 - 6 + 7(2)$

$0 \stackrel{?}{=} -8 - 6 + 14$ ✓