Graphing v. Factoring

Graphing:

The equation needs to be in the form:

$y=ax^2+bx+c$

Graph the equation and identify the roots, aka the x-intercepts, or the zeroes.

Factoring:

The equation needs to be in the form:

$ax^2+bx+c=0$

Factor completely and then set each factor equal to 0. Solve each equation for x.

EQUATIONS NOT IN Standard Form

MOVE ⊖ FACTOR ⊖ SOLVE!

17. $x^2 + 4x = 21$

$-21 \quad -21$

$x^2+4x-21=0$

$a=1 \quad b=4 \quad c=-21$

$ac=-21$

1	-21
-3	$+7$

$(x-3)(x+7)=0$

$x-3=0 \quad x+7=0$

$+3+3 \quad -7-7$

$x=3 \quad x=-7$

$\{-7, 3\}$

18. $x^2 - 45 = 4x$

$-4x \quad -4x$

$x^2-4x-45=0$

$a=1 \quad b=-4 \quad c=-45$

$ac=-45$

-1	45
-3	15
$+5$	9

$(x+5)(x-9)=0$

$x+5=0 \quad x-9=0$

$x=-5 \quad x=9$

$\{-5, 9\}$

#19 $x^2-5x-64=7x$

$-7x \quad -7x$

$x^2-12x-64=0$

21. $11x^2 = x^2 + 8x$

$-x^2 \quad -x^2$

$10x^2=8x$

$-8x \quad -8x$

$10x^2-8x=0$

$\frac{10x^2}{2x} \quad \frac{8x}{2x}$

$2x(5x-4)=0$

$2x=0 \quad 5x-4=0$

$+4 \quad +4$

$\frac{2x}{2}=\frac{0}{2} \quad \frac{5x}{5}=\frac{4}{5}$

$x=0 \quad x=\frac{4}{5}$

$\{0, \frac{4}{5}\}$

22. $16x^2 = 9$