Factoring Special Cases

Factoring a Difference of Squares

Standard Form Equation	Factored Form Equation	y-Intercept	Zeros	Axis of Symmetry
$y = x^2 - 1$	$y=(x+1)(x-1)$	-1	$-1, +1$	0
$y = x^2 - 4$	$y=(x+2)(x-2)$	-4	$-2, +2$	0
$y = x^2 - 9$	$y=(x+3)(x-3)$	-9	$-3, +3$	0
$y = x^2 - 16$	$y=(x+4)(x-4)$	-16	$-4, +4$	0
$y = x^2 - 25$	$y=(x+5)(x-5)$	-25	$-5, +5$	0
$y = x^2 - 36$	$y=(x+6)(x-6)$	-36	$-6, +6$	0

What do all the differences of squares have in common?

Factoring a Quadratic in the Form $y = x^2 + bx$

Standard Form Equation	Factored Form Equation	y-Intercept	Zeros	Axis of Symmetry
$y = x^2 - 5x$	$y=x(x-5)$	0	0, 5	$\frac{0+5}{2}=2.5$
$y = x^2 - 2x$	$y=x(x-2)$	0	0, 2	$\frac{0+2}{2}=1$
$y = x^2 - x$	$y=x(x-1)$	0	0, +1	$\frac{0+1}{2}=0.5$
$y = x^2 + x$	$y=x(x+1)$	0	0, −1	−0.5
$y = x^2 + 2x$	$y=x(x+2)$	0	0, −2	−1
$y = x^2 + 7x$	$y=x(x+7)$	0	0, −7	−3.5

What do all of the relations in the table above have in common?