

Algebra 1 Honors Unit 1: Linear Equations and Functions Date: _____

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$(2x+3)^2 - (x-1)^2 = 16$
 $(2x+3)(2x+3) - (x-1)(x-1) = 16$

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$(2x+3)(2x+3) - (x-1)(x-1) = 16$
 $4x^2 + 12x + 9 - (x^2 - 2x + 1) = 16$
 $4x^2 + 12x + 9 - x^2 + 2x - 1 = 16$
 $3x^2 + 14x + 8 = 16$

$(2x+3)(2x+3) - (x-1)(x-1) = 16$
 $4x^2 + 12x + 9 - (x^2 - 2x + 1) = 16$
 $4x^2 + 12x + 9 - x^2 + 2x - 1 = 16$
 $3x^2 + 14x + 8 = 16$

$3x^2 + 14x + 8 = 16$
 $3x^2 + 14x - 8 = 16 - 8$
 $3x^2 + 14x - 8 = 8$

$3x^2 + 14x + 8 = 16$
 $3x^2 + 14x + 8 = 16 - 8$
 $3x^2 + 14x - 8 = 8$

$3x^2 + 14x - 8 = 8$
 $3x^2 + 14x - 8 - 8 = 8 - 8$
 $3x^2 + 14x - 16 = 0$

$3x^2 + 14x + 8 = 16$
 $3x^2 + 14x + 8 = 16 - 8$
 $3x^2 + 14x - 8 = 8$

Factor the quadratic equation:

Factor the quadratic equation: $3x^2 + 14x - 16 = 0$

$3x^2 + 14x - 16 = 0$
 $(3x-2)(x+8) = 0$

$3x^2 + 14x - 16 = 0$
 $(3x-2)(x+8) = 0$

$3x^2 + 14x - 16 = 0$
 $(3x-2)(x+8) = 0$

$3x-2 = 0$ or $x+8 = 0$
 $3x = 2$ or $x = -8$
 $x = \frac{2}{3}$ or $x = -8$

$3x-2 = 0$ or $x+8 = 0$
 $3x = 2$ or $x = -8$
 $x = \frac{2}{3}$ or $x = -8$

Check the solutions:
 $x = \frac{2}{3}$: $(2(\frac{2}{3})+3)^2 - (\frac{2}{3}-1)^2 = 16$
 $(\frac{4}{3}+3)^2 - (\frac{2}{3}-1)^2 = 16$
 $(\frac{13}{3})^2 - (-\frac{1}{3})^2 = 16$
 $\frac{169}{9} - \frac{1}{9} = 16$
 $\frac{168}{9} = 16$
 $\frac{56}{3} = 16$
 $56 = 48$ (False)

Check the solutions:
 $x = -8$: $(2(-8)+3)^2 - (-8-1)^2 = 16$
 $(-16+3)^2 - (-9)^2 = 16$
 $(-13)^2 - 81 = 16$
 $169 - 81 = 16$
 $88 = 16$ (False)