

Section 5.1 - Graphing Quadratics

Vocabulary

Quadratic function, parabola, Standard Form, Vertex Form, vertex, maximum/minimum, axis of symmetry, y-intercept, x-intercept, roots, zeros, solutions, parent graph, transformations, horizontal shift, vertical shift, reflection across the x-axis, vertical stretch/shrink

I. For each equation:

- Find the vertex and axis of symmetry.
- Find the y-intercept
- Find the x-intercepts, & verify using algebra
- Graph, by plotting at least 5 points
- Identify the transformations from the parent graph

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|-----------------------|------------------------|
| 1) $y = x^2 - 6x + 5$ | 4) $y = x^2 + 3$ |
| 2) $y = -(x+3)^2 + 6$ | 5) $y = -x^2 - 4x - 2$ |
| 3) $y = (x-2)^2$ | 6) $y = (x-1)^2 - 4$ |

Section 5.2 - Solve by Factoring

Vocabulary

Binomial, trinomial, factors, difference of two squares, perfect square trinomial, factor by grouping

II. For each equation, find all real solutions. Leave any non-integer answers as simplified fractions.

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|-------------------------|--------------------------|
| 1) $3x^2 - x = 4$ | 7) $-2x^2 + 18 = 0$ |
| 2) $4x^2 + 12x + 9 = 0$ | 8) $2x^2 - 2x - 24 = 0$ |
| 3) $0 = x^2 - 11x - 12$ | 9) $3x^2 + 5x = 2$ |
| 4) $2x^2 - 5x - 25 = 0$ | 10) $x^2 + 2x = 24$ |
| 5) $4x^2 - 1 = 0$ | 11) $9x^2 = 25$ |
| 6) $x^2 + 15x + 26 = 0$ | 12) $6x^2 + 17x + 7 = 0$ |

Section 5.3 - Solve by Taking the Square Root

Vocabulary

Square root, radical, positive/negative solutions

III. For each equation, find all real and imaginary solutions. Leave your answers in simplified radical form.

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|--------------------|------------------------------|
| 1) $x^2 + 7 = -37$ | 4) $\frac{1}{2}(x-3)^2 = 14$ |
| 2) $x^2 - 24 = 56$ | 5) $2x^2 + 10 = -190$ |
| 3) $4x^2 + 80 = 0$ | 6) $2(x+1)^2 = 16$ |

Section 5.5 - Solve by Completing the Square

Vocabulary

Perfect square trinomial, leading coefficient

IV. For each equation, find all real and imaginary solutions. Leave your answers in simplified radical form.

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|-------------------------|-------------------------|
| 1) $x^2 + 8x - 20 = 0$ | 4) $-x^2 + 4x - 2 = 0$ |
| 2) $x^2 + 4x + 8 = 0$ | 5) $2x^2 - 12x - 2 = 0$ |
| 3) $x^2 + 10x + 89 = 0$ | 6) $3x^2 - 6x - 5 = 0$ |

Section 5.6 - Solve using the Quadratic Formula

Vocabulary

Discriminant, real root, imaginary root, double root
Quadratic Formula

V. For each equation, find all real and imaginary solutions. Leave your answers in simplified radical form.

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|------------------------|-------------------------|
| 1) $x^2 + 3x - 9 = 0$ | 4) $x^2 + 7x + 18 = 0$ |
| 2) $x^2 + 2x + 2 = 0$ | 5) $-3x^2 + 6x - 3 = 0$ |
| 3) $x^2 + 6x - 13 = 0$ | 6) $-7x^2 = -9$ |

