

Section 3.5 – Attributes of Quadratic Equations

Problem Set 1

Complete the square with the following polynomials.

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| 1. $x^2 + 7x - 4$ | 2. $x^2 + 4x - 5$ | 3. $x^2 - 2x - 3$ | 4. $2x^2 - 6x + 10$ |
| 5. $x^2 - 9x + 1$ | 6. $-x^2 + 6x + 6$ | 7. $4x^2 - 6x + 2$ | 8. $-2x^2 - 9x + 8$ |
| 9. $-x^2 - 6x + 3$ | 10. $-7x^2 + 14x - 7$ | 11. $-5x^2 + 10x + 2$ | 12. $-4x^2 + 3x + 7$ |

Find equation of the axis of symmetry and the coordinates of the vertex for each of the following polynomials by completing the square.

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| 13. $y = x^2 + 10x + 6$ | 14. $y = x^2 - 9x - 4$ | 15. $y = x^2 - 4x + 9$ | 16. $y = 2x^2 + 10x + 8$ |
| 17. $y = -x^2 - 2x + 5$ | 18. $y = -2x^2 + 6x - 2$ | 19. $y = x^2 + 10x + 8$ | 20. $y = -3x^2 + 10x - 7$ |
| 21. $y = 6x^2 - 3x + 4$ | 22. $y = 8x^2 - 5x - 10$ | 23. $y = 3x^2 + 9x - 7$ | 24. $y = 2x^2 - 2x - 1$ |

Find equation of the axis of symmetry and the coordinates of the vertex for each of the following polynomials by using the formula for the coordinates of the vertex.

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| 25. $y = -2x^2 - 5x + 2$ | 26. $y = -x^2 - 9x + 8$ | 27. $y = x^2 - 4x - 3$ | 28. $y = -10x^2 - 10x + 10$ |
| 29. $y = -4x^2 - 7x + 6$ | 30. $y = 9x^2 - 7x - 9$ | 31. $y = -3x^2 - 10x + 1$ | 32. $y = -2x^2 - 10x + 4$ |

Graph the following equations by finding the vertex and y-intercept.

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| 33. $y = x^2 - x - 7$ | 34. $y = 5x^2 + 10x + 6$ | 35. $y = -5x^2 + 2x - 1$ | 36. $y = -7x^2 - 14x - 2$ |
| 37. $y = -x^2 + 10x - 2$ | 38. $y = -2x^2 - 6x + 3$ | 39. $y = -10x^2 + 7x + 3$ | 40. $y = 8x^2 - 5x - 6$ |