

## Algebra 2 Unit 2 Review #2

Factor completely.

1. $3x^3 + 9x^2 - 3x - 9$	2. $2x^2 + x - 6$	3. $5x^2 - 12x + 4$
4. $2x^2 - 4xy - 16y^2$	5. $81x^4 - 16$	6. $-3x^2 + 7x + 6$
7. $x^2 + 4$	8. $2x^3y^2 - 2xy^2$	9. $10x^2 + 29x + 10$
10. $x^2 + 9x - 36$	11. $3x^3 + 3x^2 - 36x$	12. $x^2 - 9x + 10$

Rewrite in vertex form.

13. $f(x) = x^2 + 8x - 3$	14. $y = x^2 - 10x + 15$
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Rewrite in standard form.

15. $f(x) = 3(x + 1)^2 - 4$	16. $f(x) = (x - 7)^2 + 6$
17. $f(x) = 3(x + 1)(x - 5)$	18. $f(x) = -(x - 4)(x - 6)$

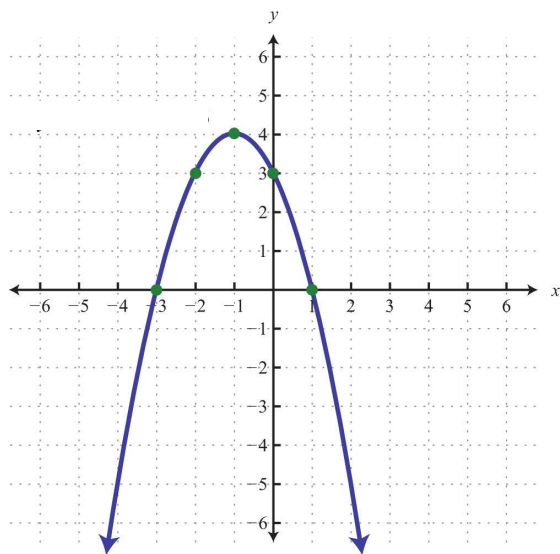
Find the vertex, axis of symmetry, y-intercept, and maximum or minimum value. Sketch the graph and state domain and range in interval notation for odds and set notation for evens.

19. $f(x) = (x + 3)^2 - 5$	20. $f(x) = -3(x + 2)^2 + 5$
21. $f(x) = x^2 + 6x + 5$	22. $f(x) = x^2 - 4x - 2$

Without graphing state the vertex, maximum or minimum value and the domain/range in interval notation.

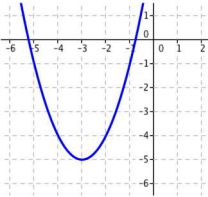
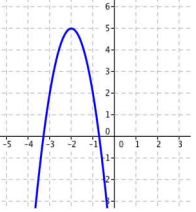
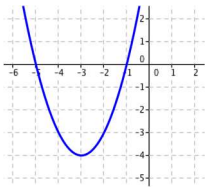
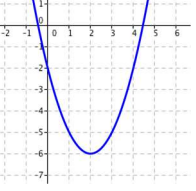
23. $f(x) = 4x^2 + 8x - 5$	24. $y = -(x + 7)^2 - 2$
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Use the graph to answer the questions.



25. State the vertex.
26. State the axis of symmetry.
27. State the max / min value.
28. Given that  $a = -1$ , write the equation of the parabola in vertex form.
29. State the y-intercept.
30. State the x-intercept(s).
31. State the domain and range in SET notation.

# ANSWERS

1. $3(x+3)(x+1)(x-1)$	2. $(2x-3)(x+2)$	3. $(5x-2)(x-2)$
4. $2(x+2y)(x-4y)$	5. $(9x^2+4)(3x+2)(3x-2)$	6. $-(3x+2)(x-3)$
7. prime	8. $2xy^2(x+1)(x-1)$	9. $(5x+2)(2x+5)$
10. $(x+12)(x-3)$	11. $3x(x+4)(x-3)$	12. prime
13. $y=(x+4)^2-19$	14. $y=(x-5)^2-10$	15. $y=3x^2+6x-1$
16. $y=x^2-14x+55$	17. $y=3x^2-12x-15$	18. $y=-x^2+10x-24$
19.  <p>             Vertex: <math>(-3, -5)</math>              AOS: <math>x = -3</math>              y-intercept: <math>(0, 4)</math>              Min = <math>-5</math>              D: <math>(-\infty, \infty)</math>              R: <math>[-5, \infty)</math> </p>	20.  <p>             Vertex: <math>(-2, 5)</math>              AOS: <math>x = -2</math>              y-intercept: <math>(0, -7)</math>              Max = <math>5</math>              D: <math>\{x x \in R\}</math>              R: <math>\{y y \leq 5\}</math> </p>	
21.  <p>             Vertex: <math>(-3, -4)</math>              AOS: <math>x = -3</math>              y-intercept: <math>(0, 5)</math>              Min = <math>-4</math>              D: <math>(-\infty, \infty)</math>              R: <math>[-4, \infty)</math> </p>	22.  <p>             Vertex: <math>(2, -6)</math>              AOS: <math>x = 2</math>              y-intercept: <math>(0, -2)</math>              Min = <math>-6</math>              D: <math>\{x x \in R\}</math>              R: <math>\{y y \geq -6\}</math> </p>	
23. Vertex: $(-1, -9)$ Min = $-9$ D: $(-\infty, \infty)$ R: $[-9, \infty)$	24. Vertex: $(-7, -2)$ Max = $-2$ D: $(-\infty, \infty)$ R: $(-\infty, -2]$	25. $(-1, 4)$
26. $x = -1$	27. Max = 4	28. $y = -(x+1)^2 + 4$
29. $(0, 3)$	30. $(-3, 0), (1, 0)$	31. D: $\{x x \in R\}$ R: $\{y y \leq 4\}$