

Review - Radicals and Quadratics

Date _____ Period _____

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Simplify. Use absolute value signs when necessary.

1) $-9\sqrt[4]{243m^2p^5q^{10}}$

Simplify.

2) $-\sqrt[3]{162} - 3\sqrt[3]{48} - 3\sqrt[3]{192} + 2\sqrt[3]{48}$

3) $(\sqrt{3} + 4\sqrt{2})(\sqrt{3} + \sqrt{4})$

4) $\frac{3}{4\sqrt{3} + 2\sqrt{5}}$

5) $\frac{5 - \sqrt{5}}{5 - 2\sqrt{5}}$

Solve each equation. Remember to check for extraneous solutions.

6) $\sqrt{3k + 37} = \sqrt{1 - k}$

Perform the indicated operation.

7) $f(a) = 4a - 5$
 $g(a) = a^2 + 5$
Find $-f(a) + 4g(a)$

8) $f(x) = 2x - 3$
 $g(x) = x^2 + 3x$
Find $f(x) \cdot g(x)$

9) $g(x) = 3x - 4$
 $f(x) = -4x - 2$
Find $g(f(-7))$

10) $f(a) = a^3 - 3a$
 $g(a) = 4a + 1$
Find $(f \circ g)(a)$

Find the absolute value of each complex number.

11) $|-2 + 10i|$

Simplify.

12) $-6 + (-2 + 7i) - (7 - 8i)$

13) $(1 + 7i)(8 + 2i)$

Solve each equation with the quadratic formula.

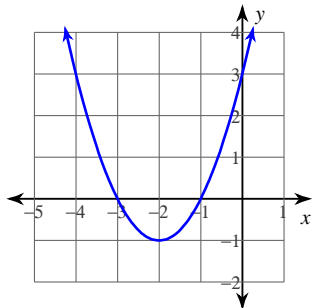
14) $3v^2 - 5 = 2v$

15) $2x^2 = -1 - 6x$

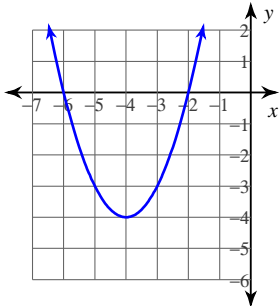
Sketch the graph of each function.

16) $f(x) = 2x^2 - 16x + 33$

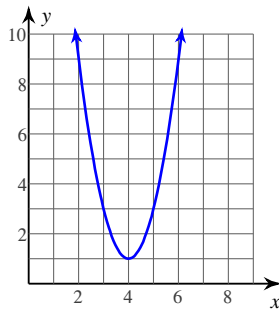
A)



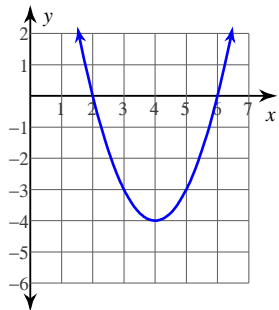
B)



C)

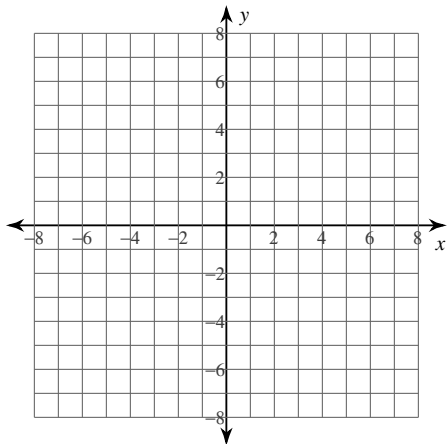


D)



Identify the vertex, axis of symmetry, min/max value, y-intercept, and x-intercepts of each. Then sketch the graph.

17) $f(x) = (x - 6)(x - 4)$



Solve each system of equations.

18) $y - 5 = x$
 $y = x^2 + 2x + 3$

- 19) The table shows the total number of segments that can be drawn among x points, no three of which are collinear.
- Find a quadratic model for the data.
 - Predict the number of segments that can be drawn among ten points.

Number of points	Number of segments
2	1
3	3
4	6
5	10

- 20) The equation for the cost in dollars of producing automobile tires is

$C = 0.000015x^2 - 0.03x + 35$ where x is the number of tires produced.

- Find the number of tires that minimizes the cost.
- What is the cost for that number of tires.

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Simplify. Use absolute value signs when necessary.

$$1) -9\sqrt[4]{243m^2p^5q^{10}}$$

$$-27q^2 |p| \sqrt[4]{3m^2pq^2}$$

Simplify.

$$2) -\sqrt[3]{162} - 3\sqrt[3]{48} - 3\sqrt[3]{192} + 2\sqrt[3]{48}$$

$$-5\sqrt[3]{6} - 12\sqrt[3]{3}$$

$$3) (\sqrt{3} + 4\sqrt{2})(\sqrt{3} + \sqrt{4})$$

$$3 + 2\sqrt{3} + 4\sqrt{6} + 8\sqrt{2}$$

$$4) \frac{3}{4\sqrt{3} + 2\sqrt{5}} \cdot \frac{6\sqrt{3} - 3\sqrt{5}}{14}$$

$$5) \frac{5 - \sqrt{5}}{5 - 2\sqrt{5}}$$

$$3 + \sqrt{5}$$

Solve each equation. Remember to check for extraneous solutions.

$$6) \sqrt{3k + 37} = \sqrt{1 - k}$$

$$\{-9\}$$

Perform the indicated operation.

$$7) f(a) = 4a - 5$$

$$g(a) = a^2 + 5$$

$$\text{Find } -f(a) + 4g(a)$$

$$4a^2 - 4a + 25$$

$$8) f(x) = 2x - 3$$

$$g(x) = x^2 + 3x$$

$$\text{Find } f(x) \cdot g(x)$$

$$2x^3 + 3x^2 - 9x$$

$$9) g(x) = 3x - 4$$

$$f(x) = -4x - 2$$

$$\text{Find } g(f(-7))$$

$$74$$

$$10) f(a) = a^3 - 3a$$

$$g(a) = 4a + 1$$

$$\text{Find } (f \circ g)(a)$$

$$64a^3 + 48a^2 - 2$$

Find the absolute value of each complex number.

$$11) |-2 + 10i|$$

$$2\sqrt{26}$$

Simplify.

$$12) -6 + (-2 + 7i) - (7 - 8i)$$

$$-15 + 15i$$

$$13) (1 + 7i)(8 + 2i)$$

$$-6 + 58i$$

Solve each equation with the quadratic formula.

$$14) 3v^2 - 5 = 2v$$

$$\left\{ \frac{5}{3}, -1 \right\}$$

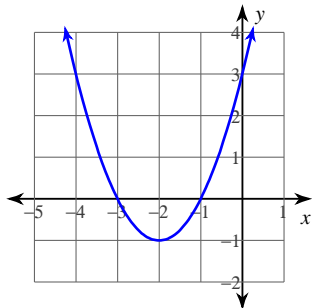
$$15) 2x^2 = -1 - 6x$$

$$\left\{ \frac{-3 + \sqrt{7}}{2}, \frac{-3 - \sqrt{7}}{2} \right\}$$

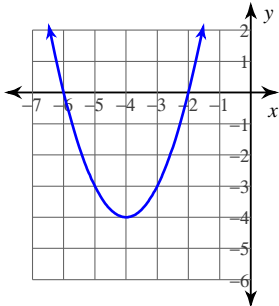
Sketch the graph of each function.

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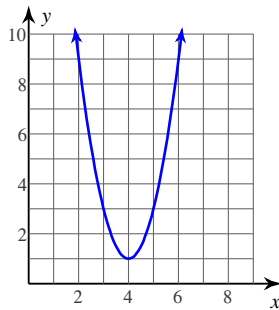
A)



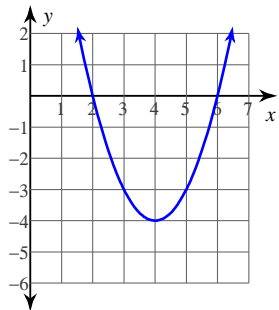
B)



*C)

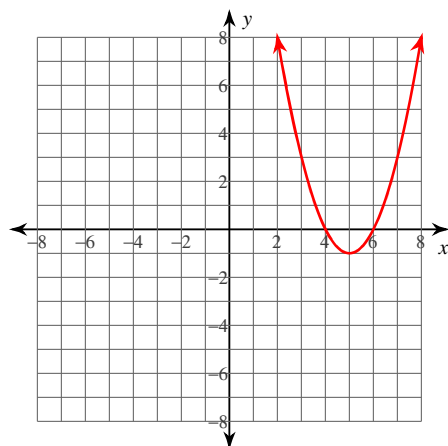


D)



Identify the vertex, axis of symmetry, min/max value, y-intercept, and x-intercepts of each. Then sketch the graph.

17) $f(x) = (x - 6)(x - 4)$



Vertex: (5, -1)
 Axis of Sym.: $x = 5$
 Min value = -1
 y-int: 24
 x-int: 6 and 4

Solve each system of equations.

18) $y - 5 = x$
 $y = x^2 + 2x + 3$
 (-2, 3), (1, 6)

- 19) The table shows the total number of segments that can be drawn among x points, no three of which are collinear.
- Find a quadratic model for the data.
 - Predict the number of segments that can be drawn among ten points.

Number of points	Number of segments
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3	3
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a. $y = 1/2x^2 - 1/2x$ b. 45

- 20) The equation for the cost in dollars of producing automobile tires is $C = 0.000015x^2 - 0.03x + 35$ where x is the number of tires produced.

- Find the number of tires that minimizes the cost.
- What is the cost for that number of tires.

a. 1000 b. \$20