Summer Review

Date_____ Period____

Properties of Exponents: Simplify. Your answer should contain only positive exponents.

1) $2x^3y^3 \cdot yx^3 \cdot x^{-3}y^2$

2) $(3xy^4)^{-1}$

3) $\frac{4y^4}{3x^3y^2}$

4) $(x^{-4}y^{-3} \cdot 2y^4)^4$

5) $\frac{y^{-1} \cdot 2x^4y^{-2}}{4x^{-4}y^4}$

6) $\frac{2a^4b^2}{(2a^2b^{-4})^4}$

Rational Exponents: Simplify.

7) $(9n^6)^{\frac{1}{2}}$

8) $(64k^9)^{\frac{1}{3}}$

Simplifying Radicals: Simplify.

9) $\sqrt{18}$

10) $-4\sqrt{150}$

11) $\sqrt{8x^2y}$

12) $2\sqrt{72m^4n^2}$

13) $6\sqrt[3]{192}$

14) $7\sqrt[3]{81m^5n}$

Factoring: Factor each completely.

15) $2n^2 - 18n$

16) $n^2 - 6n + 5$

17) $n^2 - 2n - 35$

18) $x^2 - 100$

19) $12a^3 + 2a^2 + 6a + 1$

20) $10x^3 + x^2 - 40x - 4$

21) $125x^3 + 1$

22) $a^3 + 125$

Operations with Rational Expressions: Simplify each expression.

23) $\frac{5n}{3} + \frac{6n - 1}{2n - 2}$

24) $\frac{2}{v + 3} + \frac{5}{v + 1}$

25) $\frac{x - 6}{2} - \frac{2x}{x + 2}$

26) $\frac{4m - 14}{7m^2} \cdot \frac{m - 7}{4m - 14}$

27) $\frac{10 - x}{x - 3} \cdot \frac{x - 7}{7x^2 - 70x}$

28) $\frac{10p^3 - 100p^2}{7p} \div \frac{1}{7p}$

Absolute Value Equations: Solve each equation.

29) $\frac{|-4m|}{8} = 2$

30) $|-4x - 5| + 2 = 9$

Completing the Square: Solve each equation by completing the square.

31) $b^2 + 12b - 21 = -8$

Solving Quadratic Equations: Solve each equation.

32) $7(1 - 3k) = -25 - 5k$

33) $x^2 - 8x = -12$

34) $16x^2 - 8 = 1$

Solving Radical Equations: Solve each equation. Remember to check for extraneous solutions.

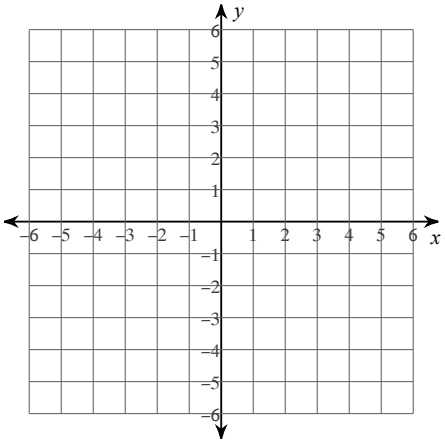
35) $11 = \sqrt{\frac{a}{4}} + 2$

36) $p = \sqrt{8 - 7p}$

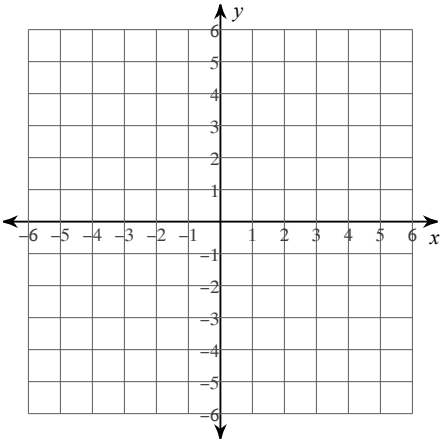
37) $\sqrt{34 - 3v} - v = -2$

Linear Functions: Sketch the graph of each line.

38) $y = -\frac{5}{3}x + 4$

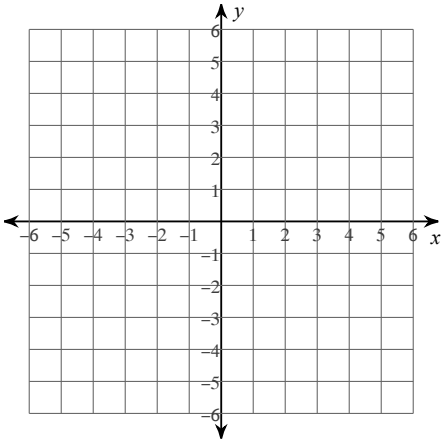


39) $y = \frac{4}{3}x - 2$



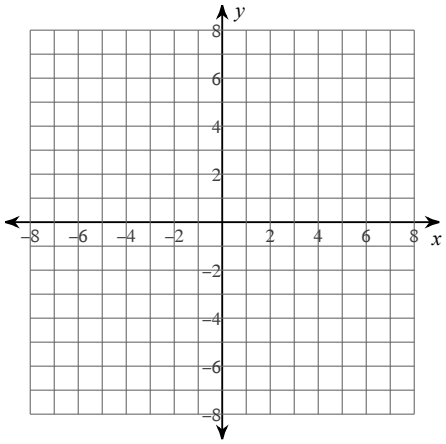
Absolute Functions: Graph each equation.

40) $y = |x + 1|$

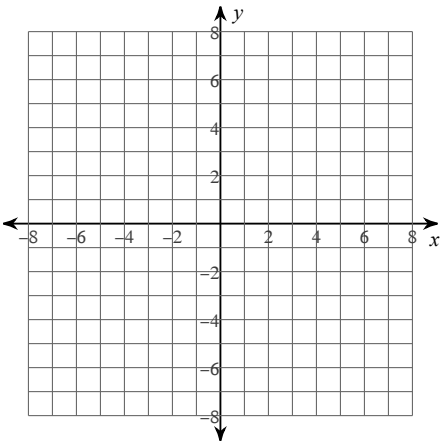


Quadratic Functions: Identify the vertex and axis of symmetry of each. Then sketch the graph.

41) $y = -2(x-1)^2 - 2$



42) $y = \frac{1}{4}x^2 + 2x + 7$



Summer Review

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Properties of Exponents: Simplify. Your answer should contain only positive exponents.

1) $2x^3y^3 \cdot yx^3 \cdot x^{-3}y^2$

$2x^3y^6$

2) $(3xy^4)^{-1}$

$\frac{1}{3xy^4}$

3) $\frac{4y^4}{3x^3y^2}$

$\frac{4y^2}{3x^3}$

4) $(x^{-4}y^{-3} \cdot 2y^4)^4$

$\frac{16y^4}{x^{16}}$

5) $\frac{y^{-1} \cdot 2x^4y^{-2}}{4x^{-4}y^4}$

$\frac{x^8}{2y^7}$

6) $\frac{2a^4b^2}{(2a^2b^{-4})^4}$

$\frac{b^{18}}{8a^4}$

Rational Exponents: Simplify.

7) $(9n^6)^{\frac{1}{2}}$

$3n^3$

8) $(64k^9)^{\frac{1}{3}}$

$4k^3$

Simplifying Radicals: Simplify.

9) $\sqrt{18}$

$3\sqrt{2}$

10) $-4\sqrt{150}$

$-20\sqrt{6}$

11) $\sqrt{8x^2y}$

$2x\sqrt{2y}$

12) $2\sqrt{72m^4n^2}$

$12m^2n\sqrt{2}$

13) $6\sqrt[3]{192}$

$24\sqrt[3]{3}$

14) $7\sqrt[3]{81m^5n}$

$21m\sqrt[3]{3m^2n}$

Factoring: Factor each completely.

15) $2n^2 - 18n$

$2n(n - 9)$

16) $n^2 - 6n + 5$

$(n - 1)(n - 5)$

17) $n^2 - 2n - 35$

$(n + 5)(n - 7)$

18) $x^2 - 100$

$(x - 10)(x + 10)$

19) $12a^3 + 2a^2 + 6a + 1$

$(2a^2 + 1)(6a + 1)$

20) $10x^3 + x^2 - 40x - 4$

$(x - 2)(x + 2)(10x + 1)$

21) $125x^3 + 1$

$(5x + 1)(25x^2 - 5x + 1)$

22) $a^3 + 125$

$(a + 5)(a^2 - 5a + 25)$

Operations with Rational Expressions: Simplify each expression.

23) $\frac{5n}{3} + \frac{6n - 1}{2n - 2}$

$\frac{10n^2 + 8n - 3}{6(n - 1)}$

24) $\frac{2}{v + 3} + \frac{5}{v + 1}$

$\frac{7v + 17}{(v + 3)(v + 1)}$

25) $\frac{x - 6}{2} - \frac{2x}{x + 2}$

$\frac{x^2 - 8x - 12}{2(x + 2)}$

26) $\frac{4m - 14}{7m^2} \cdot \frac{m - 7}{4m - 14}$

$\frac{m - 7}{7m^2}$

27) $\frac{10 - x}{x - 3} \cdot \frac{x - 7}{7x^2 - 70x}$

$\frac{-x + 7}{7x(x - 3)}$

28) $\frac{10p^3 - 100p^2}{7p} \div \frac{1}{7p}$

$10p^2(p - 10)$

Absolute Value Equations: Solve each equation.

29) $\frac{|-4m|}{8} = 2$

$\{-4, 4\}$

30) $|-4x - 5| + 2 = 9$

$\left\{-3, \frac{1}{2}\right\}$

Completing the Square: Solve each equation by completing the square.

31) $b^2 + 12b - 21 = -8$

$\{1, -13\}$

Solving Quadratic Equations: Solve each equation.

32) $7(1 - 3k) = -25 - 5k$

$\{2\}$

33) $x^2 - 8x = -12$

$\{2, 6\}$

34) $16x^2 - 8 = 1$

$\left\{\frac{3}{4}, -\frac{3}{4}\right\}$

Solving Radical Equations: Solve each equation. Remember to check for extraneous solutions.

35) $11 = \sqrt{\frac{a}{4}} + 2$

$\{324\}$

36) $p = \sqrt{8 - 7p}$

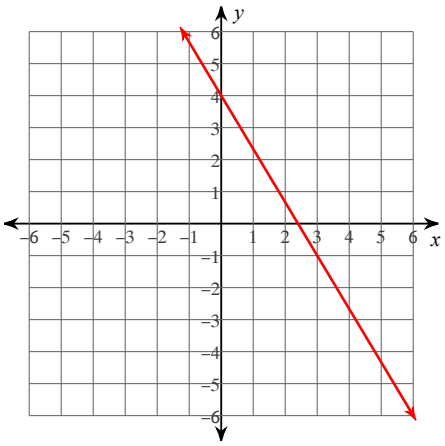
$\{1\}$

37) $\sqrt{34 - 3v} - v = -2$

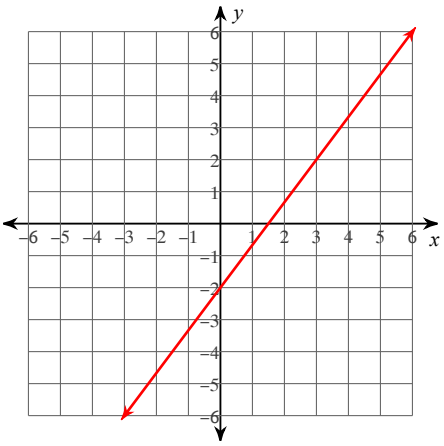
$\{6\}$

Linear Functions: Sketch the graph of each line.

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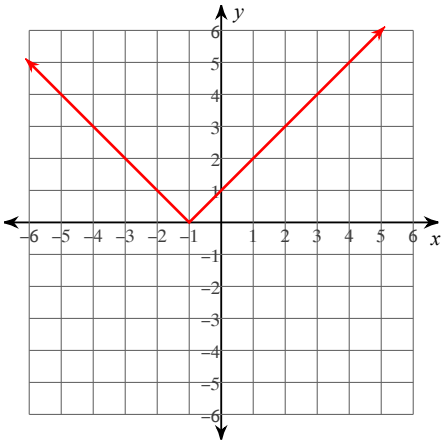


39) $y = \frac{4}{3}x - 2$



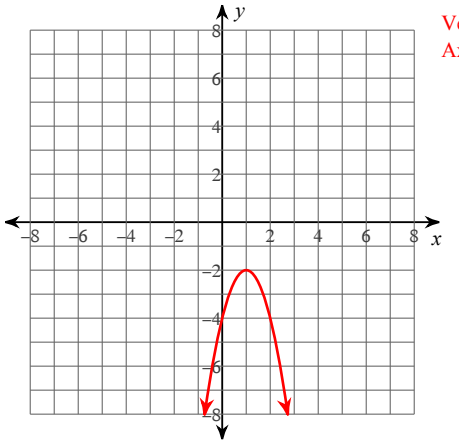
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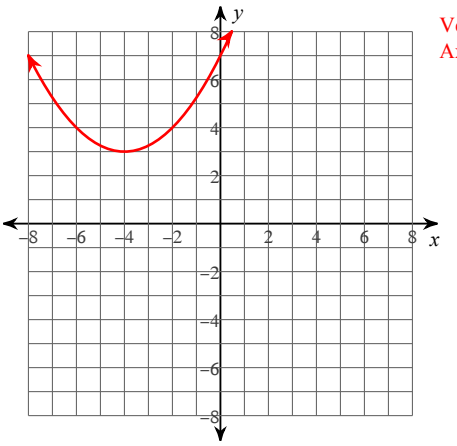
Quadratic Functions: Identify the vertex and axis of symmetry of each. Then sketch the graph.

41) $y = -2(x-1)^2 - 2$



Vertex: $(1, -2)$
Axis of Sym.: $x = 1$

42) $y = \frac{1}{4}x^2 + 2x + 7$



Vertex: $(-4, 3)$
Axis of Sym.: $x = -4$