

Unit 1 Review

Date _____

Simplify. Your answer should contain only positive exponents.

1) $-3zx^2y^3 \cdot 3x^2 \cdot -3x^3y^2z^2$

2) $3ac^4 \cdot 3ac^3 \cdot a^3b^3c^4$

3) $(-4pm^4)^2$

4) $(2qp^3r^4)^2$

5) $-\frac{4pq}{2m^2p^2q^3}$

6) $\frac{2a^2b^3c^2}{a^4b^2c^2}$

7) $-x^3y^4z^2 \cdot (2xy^3z^3)^4$

8)
$$\left(\frac{(2xy^4z^3)^4}{-x^4y^2z^3}\right)^2$$

9)
$$\frac{3yx^4z^4}{2x^3y^2z^4 \cdot -4x^3z^3}$$

10)
$$-\frac{2pq}{(-2m^3p^4q^3)^4 \cdot -2mp^3q^3}$$

Write each expression in exponential form.

11) $\sqrt[4]{3x}$

12) $\frac{1}{(\sqrt{10x})^5}$

Write each expression in radical form.

13) $n^{\frac{5}{2}}$

14) $(2n)^{-\frac{1}{4}}$

Simplify.

15) $\sqrt{80m^6p^5q^9}$

16) $5\sqrt{72a^4b^2c^3}$

17) $3\sqrt{3} - 2\sqrt{3} - 2\sqrt{2} + 2\sqrt{3}$

18) $3\sqrt{54} + 3\sqrt{6} - \sqrt{24} - 2\sqrt{8}$

19) $-3\sqrt{2} \cdot 4\sqrt{10}$

20) $-3\sqrt{15}(2 + 2\sqrt{10})$

21) $(5\sqrt{2} - 3\sqrt{5})(5\sqrt{3} - \sqrt{5})$

22) $\frac{5\sqrt{15}}{3\sqrt{48}}$

$$23) \frac{3\sqrt{5} + 5\sqrt{2}}{2\sqrt{15}}$$

$$24) \frac{5}{3 + 4\sqrt{3}}$$

$$25) \frac{3\sqrt{5} - 5}{2 - 4\sqrt{3}}$$

$$26) -7 - i + 6 + 3i + 1 + i$$

$$27) \frac{10}{3i}$$

$$28) \frac{10 + 7i}{-8i}$$

$$29) \frac{1 + 7i}{4 + 4i}$$

Solve each equation.

30) $2x - 37 = 7x - 3(1 - 4x)$

31) $8(n - 6) + 8 = 8n - 43$

32) $-6(3 - r) = -18 + 6r$

33) $2(-1 - 8x) + 3x = -3x - 2$

Solve each equation by taking square roots.

34) $5 - 8x^2 = -507$

35) $4n^2 + 3 = 151$

Solve each equation by factoring.

36) $n^2 - 3n - 14 = -4$

37) $r^2 + 7r + 6 = 0$

$$38) n^2 - n - 56 = 0$$

$$39) x^2 - 4x - 22 = -2 - 5x$$

$$40) 25a^2 - 4 = 0$$

$$41) 6v^2 + 11v + 3 = 0$$

$$42) 7a^2 - 25a + 18 = 6$$

$$43) 7m^2 + 6m = 0$$

Solve each equation with the quadratic formula.

44) $3m^2 - 5m - 102 = 10$

45) $9r^2 - 12r = 2r^2 - 12r + 14$

Solve each equation.

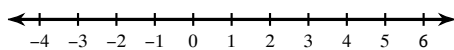
46) $|3x - 6| = 12$

47) $|-7 - 2p| + 6 = 21$

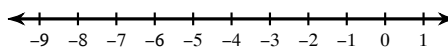
$$48) 2 + 8|3 - 9x| = 26$$

Solve each inequality and graph its solution.

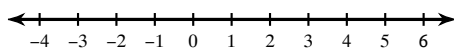
$$49) -15 + x < 3(7x - 5)$$



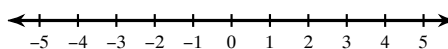
$$50) 2(8 - 4b) \leq 16 - 8b$$



$$51) 4(x - 7) > -28 + 4x$$

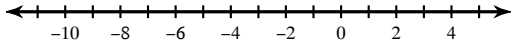


$$52) -5 + 5x \geq 2(-2 + 5x) - 4x$$

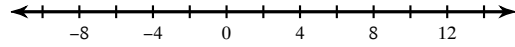


Solve each compound inequality and graph its solution.

53) $-61 < 3 + 8b \leq 27$



54) $6n - 7 \geq 47$ or $10 - 8n > 50$



Solve each inequality.

55) $|-3n + 5| > 4$

56) $4|3x - 9| \geq 84$

57) $-2|6 - 6n| + 4 \leq -20$

Answers to Unit 1 Review

1) $27z^3x^7y^5$

2) $9a^5c^{11}b^3$

3) $16p^2m^8$

4) $4q^2p^6r^8$

5) $-\frac{2}{m^2pq^2}$

6) $\frac{2b}{a^2}$

7) $-16x^7y^{16}z^{14}$

8) $256y^{28}z^{18}$

9) $-\frac{3}{8x^2yz^3}$

10) $\frac{1}{16m^{13}p^{18}q^{14}}$

11) $(3x)^{\frac{1}{4}}$

12) $(10x)^{-\frac{5}{2}}$

13) $(\sqrt{n})^5$

14) $\frac{1}{\sqrt[4]{2n}}$

15) $4m^3p^2q^4\sqrt{5pq}$

16) $30a^2bc\sqrt{2c}$

17) $3\sqrt{3} - 2\sqrt{2}$

18) $10\sqrt{6} - 4\sqrt{2}$

19) $-24\sqrt{5}$

20) $-6\sqrt{15} - 30\sqrt{6}$

21) $25\sqrt{6} - 5\sqrt{10} - 15\sqrt{15} + 15$

22) $\frac{5\sqrt{5}}{12}$

23) $\frac{3\sqrt{3} + \sqrt{30}}{6}$

24) $\frac{-15 + 20\sqrt{3}}{39}$

25) $\frac{-3\sqrt{5} - 6\sqrt{15} + 5 + 10\sqrt{3}}{22}$

26) $3i$

27) $-\frac{10i}{3}$

28) $\frac{10i - 7}{8}$

29) $\frac{4 + 3i}{4}$

30) $\{-2\}$

31) No solution.

32) { All real numbers. }

33) {0}

34) {8, -8}

35) $\{\sqrt{37}, -\sqrt{37}\}$

36) $\{5, -2\}$

37) $\{-1, -6\}$

38) {8, -7}

39) {4, -5}

40) $\left\{\frac{2}{5}, -\frac{2}{5}\right\}$

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

42) $\left\{\frac{4}{7}, 3\right\}$

43) $\left\{-\frac{6}{7}, 0\right\}$

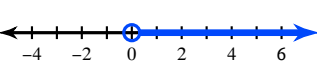
44) $\left\{7, -\frac{16}{3}\right\}$

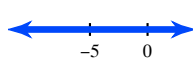
45) $\{\sqrt{2}, -\sqrt{2}\}$

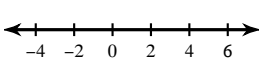
46) {6, -2}

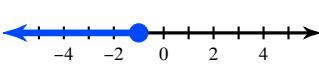
47) {-11, 4}

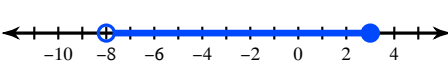
48) $\left\{0, \frac{2}{3}\right\}$

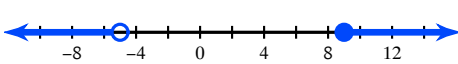
49) $x > 0$: 

50) { All real numbers. } : 

51) No solution. : 

52) $x \leq -1$: 

53) $-8 < b \leq 3$: 

54) $n \geq 9$ or $n < -5$: 

55) $n < \frac{1}{3}$ or $n > 3$

56) $x \geq 10$ or $x \leq -4$

57) $n \leq -1$ or $n \geq 3$