

Honors Algebra 2
6.5-6.7 Review

For Questions 1-6, simplify.

1. $\sqrt{\frac{5}{2x}}$

2. $\sqrt{18m^5p^6}$

3. $4\sqrt{12} - \sqrt{18} + \sqrt{108} + 7\sqrt{72}$

4. $(\sqrt{5} - \sqrt{7})^2$

5. $(7 - \sqrt{5})(3 + 2\sqrt{5})$

6. $\frac{2 - \sqrt{6}}{4 + \sqrt{6}}$

7. Write the expression $x^{\frac{5}{6}}$ in radical form.

8. Write the radical $\sqrt[5]{32z^3}$ using rational exponents.

9. Evaluate $16^{\frac{3}{2}}$.

10. MULTIPLE CHOICE If t is positive, then $\frac{6t^{\frac{2}{3}} \cdot t^{\frac{4}{3}}}{t^{\frac{1}{3}}} = ?$

A $6t^{\frac{7}{3}}$

B $6t^{\frac{1}{3}}$

C $6t^6$

D $6t^{\frac{5}{3}}$

1. $\frac{\sqrt{10x}}{2x}$

2. $3m^2p^3\sqrt{2m}$

3. $39\sqrt{2} + 14\sqrt{3}$

4. $12 - 2\sqrt{35}$

5. $\frac{11 + 11\sqrt{5}}{7 - 3\sqrt{6}}$

6. $\frac{7 - 3\sqrt{6}}{9}$

7. $\sqrt[8]{x^5}$

8. $2z^{\frac{3}{5}}$

9. 64

10. D

1. MULTIPLE CHOICE Solve $\sqrt{5y - 3} = \sqrt{7y + 9}$.

A -6

B -1

C 6

D no solution

1. D

Solve each equation.

2. $\sqrt[3]{2v - 7} = -2$

2. $v = -\frac{1}{2}$

3. $4(5n - 1)^{\frac{1}{3}} - 1 = 0$

3. $n = \frac{13}{64}$

For Questions 4 and 5, solve each inequality.

4. $\sqrt{2x + 5} + 1 > 4$

4. $x > 2$

5. Solve $5x^2 + 100 < 0$.

5. No solution

11. Simplify $(2 + \sqrt{5})(3 - \sqrt{5})$.
 A $1 + \sqrt{5}$ B $1 - \sqrt{5}$ C $-1 + \sqrt{5}$ D $-1 - \sqrt{5}$ 11. B
12. Simplify $\sqrt{75} + \sqrt{12}$.
 F 21 G $\sqrt{87}$ H $10\sqrt{3}$ J $7\sqrt{3}$ 12. J
13. Write the expression $5^{\frac{1}{7}}$ in radical form.
 A $\sqrt[7]{51}$ B 35 C $\sqrt[7]{5}$ D $\sqrt[5]{7}$ 13. C
14. Simplify the expression $m^{\frac{2}{5}} \cdot m^{\frac{1}{5}}$.
 F $m^{\frac{5}{5}}$ G $m^{\frac{3}{5}}$ H $m^{\frac{25}{5}}$ J $m^{\frac{2}{5}}$ 14. G
15. Solve $\sqrt{3x + 4} = 5$.
 A -7 B 7 C 21 D $\frac{25}{3}$ 15. B
16. Solve $2 + \sqrt{5x - 1} > 5$.
 F $x > 5$ G $x > -2$ H $x < 2$ J $x > 2$ 16. J
19. If x is a positive number, then $\sqrt[5]{x} \div x^{\frac{1}{5}} = ?$
 A x^5 B $\frac{1}{5}x$ C 1 D $\frac{1}{5}$ 19. C
20. If $2^8 \cdot y = 2^5$, then $y = ?$
 F -2^{-3} G -2^3 H $2^{\frac{1}{3}}$ J 2^{-3} 20. J
7. Simplify $\sqrt{64n^6w^4}$.
 A $8|n^3|w^2$ B $8n^3w^2$ C $\pm 8n^3w^2$ D $32|n^3|w^2$ 7. A
8. Use a calculator to approximate $\sqrt[3]{257}$ to three decimal places.
 F 6.357 G 4.004 H 16.031 J 6.358 8. F
9. Simplify $\sqrt[3]{625x^5}$.
 A $-25\sqrt[3]{x}$ B $25x^2$ C $5x\sqrt[3]{5x^2}$ D $-5x\sqrt[3]{5x}$ 9. C
10. Simplify $\sqrt{5} + \sqrt{20} - \sqrt{27} + \sqrt{147}$.
 F $5\sqrt{3} + 6$ G $3\sqrt{5} + 4\sqrt{3}$ H $3\sqrt{5} + 10\sqrt{3}$ J $2\sqrt{5} - 3\sqrt{3}$ 10. G

11. Simplify $\frac{6}{4 + \sqrt{2}}$.

A $\frac{12 + 6\sqrt{2}}{7}$

B $\frac{4 - \sqrt{2}}{2}$

C $\frac{4 - \sqrt{2}}{3}$

D $\frac{12 - 3\sqrt{2}}{7}$

11. D

15. Solve $\sqrt{2x + 4} + 1 \geq 5$.

A $x \geq 0$

B $x \leq -2$

C $-2 \leq x \leq 6$

D $x \geq 6$

15. D

13. Write the expression $\sqrt[4]{16x^9y^4}$ using rational exponents.

13. $2x^2y x^{1/4}$ or $2x^{9/4}y$

14. Simplify the expression $\frac{3^{1/2} - 1}{2 + 3^{1/2}}$.

14. $3\sqrt{3} - 5$

15. Solve $\sqrt{x + 11} - 10 = 14$.

15. $x = 565$

★ 16. Solve $\sqrt{x + 2} < 5 - \sqrt{2x + 5}$.

16. _____

17. Simplify $\frac{x - 9}{\sqrt{x} + 3}$.

17. $\sqrt{x} - 3$

$$1) \frac{\sqrt{5}}{\sqrt{2x}} \cdot \frac{\sqrt{2x}}{\sqrt{2x}} = \frac{\sqrt{10x}}{2x}$$

$$9) \frac{\sqrt{16}^3}{4^3} = \frac{64}{64}$$

$$2) \sqrt{18 m^5 p^6}$$

$$= \sqrt{9 \cdot 2 m^4 m p^6}$$

$$= 3 m^2 p^3 \sqrt{2m}$$

$$10) \frac{6t^{2/3} \cdot t^{4/3}}{t^{1/3}}$$

$$= \frac{6t^{6/3}}{t^{1/3}}$$

$$= 6t^{5/3}$$

$$3) 4\sqrt{12} - \sqrt{18} + \sqrt{108} + 7\sqrt{72}$$

$$4 \cdot 2\sqrt{3} - 3\sqrt{2} + 6\sqrt{3} + 7 \cdot 6\sqrt{2}$$

$$8\sqrt{3} - 3\sqrt{2} + 6\sqrt{3} + 42\sqrt{2}$$

$$39\sqrt{2} + 14\sqrt{3}$$

$$4) (\sqrt{5} - \sqrt{7})^2$$

$$= 5 - 2\sqrt{35} + 7$$

$$= 12 - 2\sqrt{35}$$

$$1) \sqrt{5y-3} = \sqrt{7y+9}$$

$$5y - 3 = 7y + 9$$

$$-12 = 2y$$

$$\cancel{y} = y$$

extraneous

$$5) (7 - \sqrt{5})(3 + 2\sqrt{5})$$

$$= 21 - 3\sqrt{5} + 14\sqrt{5} - 2(5)$$

$$= 11 + 11\sqrt{5}$$

$$2) \sqrt[3]{2v-7} = -2$$

$$2v-7 = -8$$

$$2v = -1$$

$$v = -1/2$$

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

$$= \frac{8 - 6\sqrt{6} + 6}{16 - 6}$$

$$= \frac{14 - 6\sqrt{6}}{10} = \frac{7 - 3\sqrt{6}}{5}$$

$$3) 4(5n-1)^{1/3} - 1 = 0$$

$$(5n-1)^{1/3} = 1/4$$

$$5n-1 = 1/64$$

$$5n = 65/64$$

$$n = 13/64$$

$$4) \sqrt{2x+5} + 1 > 4$$

$$\sqrt{2x+5} > 3$$

$$2x+5 > 9$$

$$2x > 4$$

$$x > 2$$

$$2x+5 \geq 0$$

$$x \geq -5/2$$

answer already $\geq -5/2$

$$\boxed{x > 2}$$

$$5) 5x^2 + 100 < 0$$

$$x^2 < -25$$

No solution

$$11) (2 + \sqrt{5})(3 - \sqrt{5})$$

$$6 - \sqrt{5} - 5$$

$$1 - \sqrt{5}$$

$$12) \sqrt{75} + \sqrt{12}$$

$$5\sqrt{3} + 2\sqrt{3}$$

$$7\sqrt{3}$$

$$15) \sqrt{3x+4} = 5$$

$$3x+4 = 25$$

$$3x = 21$$

$$x = 7$$

Checks out

$$16) 2 + \sqrt{5x-1} > 5$$

$$\sqrt{5x-1} > 3$$

$$5x-1 > 9$$

$$5x > 10$$

$$x > 2$$

$$5x-1 \geq 0$$

$$x \geq 1/5$$

answer already $\geq 1/5$

$$\boxed{x > 2}$$

$$20) 2^8 y = 2^5$$

$$y = \frac{2^5}{2^8}$$

$$y = \frac{1}{2^3} = \frac{1}{8}$$

$$= 2^{-3}$$

$$7) \sqrt{64n^6w^4} = 8|n^3|w^2$$

$$9) \sqrt[3]{625x^5}$$

$$\sqrt[3]{125 \cdot 5x^5}$$

$$5x \sqrt[3]{5x^2}$$

$$10) \sqrt{5} + 2\sqrt{5} - 3\sqrt{3} + 7\sqrt{3} = 3\sqrt{5} + 4\sqrt{3}$$

$$\begin{array}{r} 147 \\ \sqrt{} \\ 349 \\ \sqrt{} \\ 77 \end{array}$$

$$11) \frac{6}{4+\sqrt{2}} \cdot \frac{4-\sqrt{2}}{4-\sqrt{2}}$$

$$\frac{24-6\sqrt{2}}{16-2}$$

$$\frac{24-6\sqrt{2}}{14}$$

$$\frac{12-3\sqrt{2}}{7}$$

$$15) \sqrt{2x+4} + 1 \geq 5$$

$$\sqrt{2x+4} \geq 4$$

$$2x+4 \geq 16$$

$$2x \geq 12$$

$$x \geq 6$$

$$2x+4 \geq 0$$

$$x \geq -2$$

$$13) \sqrt[4]{16x^8y^4}$$

$$2x^2y \sqrt[4]{x}$$

$$2x^2y x^{1/4}$$

$$\begin{array}{c} + \quad - \quad + \\ | \quad | \\ 2 \quad 142 \end{array}$$

$$14) \frac{3^{1/2}-1}{2+3^{1/2}} \cdot \frac{2-3^{1/2}}{2-3^{1/2}}$$

$$= \frac{2\sqrt{3}-2-3+3^{1/2}}{4-3}$$

$$= \frac{2\sqrt{3}-5+\sqrt{3}}{1}$$

$$= 3\sqrt{3}-5$$

$$15) \sqrt{x+11} - 10 = 14$$

$$\sqrt{x+11} = 24$$

$$x+11 = 576$$

$$x = 565$$

$$16) \sqrt{x+2} < 5 - \sqrt{2x+5}$$

$$x+2 < 25 - 10\sqrt{2x+5} + 2x+5$$

$$x+2 < 30 - 10\sqrt{2x+5} + 2x$$

$$10\sqrt{2x+5} < 28 + x$$

$$100(2x+5) < 784 + 56x + x^2$$

$$0 < 284 - 144x + x^2$$

$$0 < (x-142)(x-2)$$

$$0 = x - 142$$

$$x = 142$$

$$0 = x - 2$$

$$x = 2$$

$$17) \frac{x-9}{\sqrt{x}+3} \cdot \frac{\sqrt{x}-3}{\sqrt{x}-3}$$

$$\frac{(x-9)(\sqrt{x}-3)}{x-9}$$

$$\sqrt{x}-3$$