

Math 3
Rational Exponents 2



Name _____

1. $36^{-1/2}$

$$\frac{1}{\sqrt{36}} = \frac{1}{6}$$

2. $\left(\frac{1}{8}\right)^{2/3}$

$$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

3. $\left(y^{1/3}\right)^{3/4}$

$$y^{1/4} = \sqrt[4]{y}$$

4. $\left(\frac{x^6 y^{-9}}{8}\right)^{-1/3}$

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

5. $(25+144)^{1/2}$

$$\sqrt{169} = 13$$

6. $(64)^{5/6}$

$$(2^6)^{5/6} = 2^5 = 32$$

7. $\sqrt{x^9}$

$$x^{9/6} = x^{3/2} = x^{1/2}$$

$$x\sqrt{x}$$

8. $\sqrt[4]{49n^2}$

$$7^{2/4} n^{2/4} = \sqrt{7n}$$

9. $\sqrt[8]{16}$

$$(2^4)^{1/8} = 2^{1/2} = \sqrt{2}$$

10. $\left(\frac{49}{81}\right)^{-1/2}$

$$\frac{81}{49} = \frac{9}{7}$$

11. $a^{5/6} b^{3/2} c^{7/3}$

$$a^{5/6} b^{9/6} c^{14/6}$$

$$bc^2 \sqrt[6]{a^5 b^3 c^2}$$

12. $\sqrt[3]{4} \cdot \sqrt[3]{32}$

$$2^{2/3} \cdot 2^{5/3}$$

$$2^{7/3} = 2\sqrt{2}$$

13. $\sqrt[3]{36} \cdot \sqrt[3]{36}$

$$6^{2/3} \cdot 6^{2/3} = 6^{4/3}$$

$$= 6$$

14. $(6-\sqrt{3})^2$

$$36 - 12\sqrt{3} + 3$$

$$39 - 12\sqrt{3}$$

15. $\sqrt[3]{27w^3y^6}$

$$3w^1y^2$$

16. $y^{-1/2}$

$$\frac{1}{\sqrt{y}}$$

17. $\frac{14}{7^{2/3}}$

$$\frac{2 \cdot 7^{2/3}}{7^{2/3}} = 2 \cdot 7^{1/3}$$

$$2\sqrt[3]{7}$$

18. $(x^{-3/8})^{-4/6}$

$$x^{1/6}$$

$$\sqrt[6]{x}$$

19. $x^{3/4} \cdot y^{1/2} \cdot z$

$$x^{3/4} y^{2/4} z^{4/4}$$

$$z \sqrt[4]{x^3 y^2}$$

20. $2\sqrt{48} - \sqrt{12} - 3\sqrt{63} + \sqrt{112}$

$$\frac{\wedge}{\sqrt{16 \cdot 3}} - \frac{\wedge}{\sqrt{4 \cdot 3}} - \frac{\wedge}{\sqrt{9 \cdot 7}} + \frac{\wedge}{\sqrt{16 \cdot 7}}$$

$$= 8\sqrt{3} - 2\sqrt{3} - 9\sqrt{7} + 4\sqrt{7}$$

$$6\sqrt{3} - 5\sqrt{7}$$