Express the number in the form a/b, where a and b are integers.

1.
$$\frac{2^{-3}}{3^{-2}}$$

$$\frac{3^2}{7^3} = \begin{pmatrix} 9 \\ 8 \end{pmatrix}$$

2.
$$\left(-\frac{3}{2}\right)^4 - 2^{-4}$$

$$=\frac{80}{10}=\frac{5}{1}$$

4.
$$\frac{2^0+0^2}{2+0}$$

Simplify.

5.
$$(4a^{3/2})(2a^{1/2})$$

6.
$$(8r)^{1/3}(2r^{1/2})$$

7.
$$(8x^{-2/3})x^{1/6}$$

8.
$$\left(\frac{-y^{\frac{3}{2}}}{v^{\frac{-1}{3}}}\right)^3$$

9.
$$\frac{(x^6y^3)^{\frac{-1}{3}}}{(x^4y^2)^{\frac{-1}{2}}}$$

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

10.
$$a^{\frac{4}{3}}a^{\frac{-3}{2}}a^{\frac{1}{6}}$$

11.
$$\left(\frac{c^{-4}}{16d^8}\right)^{\frac{3}{4}}$$

$$\frac{c^{-3}}{8d^6} = \frac{1}{8c^3d^6}$$

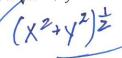
12.
$$(3x^{5/6})(8x^{2/3})$$

Rewrite the expression using rational exponents.

13.
$$\sqrt[3]{x^5}$$

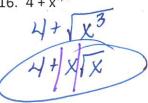
$$\sqrt[3]{x^5}$$

$$14.\sqrt{x^2+y^2}$$



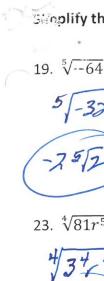
Rewrite the expression using a radical.

16.
$$4 + x^{3/2}$$



17.
$$(4 + x)^{3/2}$$

$$(a+b^{\frac{1}{2}})^{\frac{1}{2}}$$

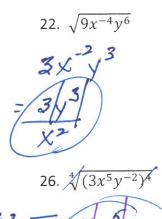


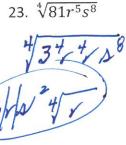
Simplify the expression, and rationalize the denominator when appropriate.

19.
$$\sqrt[5]{-64}$$

20. $\frac{1}{\sqrt[3]{4}}$

21. $\sqrt[1]{\frac{1}{7}}$





23.
$$\sqrt[4]{81r^5s^8}$$

24. $\sqrt[3]{\frac{2x^4y^4}{9x}}$

33x

25. $\sqrt[4]{\frac{x^7y^{12}}{125x}}$

5x3

$$\sqrt[4]{3}$$

$$\sqrt[4]{5}$$

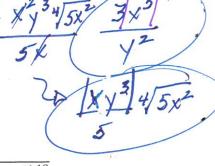
$$\sqrt[4]{5}$$

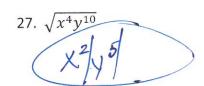
$$\sqrt[4]{5}$$

$$\sqrt[4]{5}$$

$$\sqrt[4]{5}$$

Simplify the expression, assuming x and y may be negative.





28.
$$\sqrt[4]{x^8(y-1)^{12}}$$

29. The length-weight relationship for Pacific halibut can be approximated by the formula L = $0.46\sqrt[3]{W}$, where W is in kilograms and L is in meters. The largest documented halibut weighed 230 kilograms. Estimate its length.

$$L = 0.46 \sqrt[3]{W}$$

$$= 0.46 \sqrt[3]{230}$$

$$L = 2.82 m$$

30. The length-weight relationship for a whale can be approximated by $W = 0.0016L^{2.43}$, where W is in tons and L is in feet. Estimate the weight of a whale that is 25 feet long.

$$W = 0.0016(25)^{3.43}$$
 $W = 3.99 \text{ tons}$