9-5-13
3rd Try

What does $\dfrac{a^4 b^2}{a^2 b^3}$ mean?

$$\frac{\cancel{a}\,\cancel{a}\,a\,a\;\cancel{b}\,b}{\cancel{a}\,\cancel{a}\quad\cancel{b}\,b\,b}$$

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

① Simplify $\dfrac{6a^2 b^3}{8 a b^4}$

$$\frac{\overset{3}{\cancel{6}}\,\cancel{a}\,a\;\cancel{b}\,\cancel{b}\,\cancel{b}}{\underset{4}{\cancel{8}}\,\cancel{a}\;\cancel{b}\,\cancel{b}\,\cancel{b}\,b}$$

$$\frac{3a}{4b}$$

② Simplify $\dfrac{a^3 b}{a^5 b^2}$

$$\frac{\cancel{a}\,\cancel{a}\,\cancel{a}\,\cancel{b}}{\cancel{a}\,\cancel{a}\,\cancel{a}\,a\,a\;\cancel{b}\,b} = \frac{1}{a^2 b}$$

③ Simplify $\dfrac{a^2 b^2 a\, b}{a^4 b^5 a}$

$$\frac{\cancel{a}\,\cancel{a}\,\cancel{b}\,\cancel{b}\;\cancel{a}\;\cancel{b}}{\cancel{a}\,\cancel{a}\,\cancel{a}\,a\;\cancel{b}\,\cancel{b}\,\cancel{b}\,b\,b\;\cancel{a}} \qquad \frac{1}{a^2 b^2}$$

What does b^{-2} mean?
$$\frac{1}{b^2}$$

What is $\quad 3^{-2} = \dfrac{1}{3^2} = \dfrac{1}{9}$

$$2^{-2} = \frac{1}{2^2} = \frac{1}{4}$$

$$5^{-1} = \frac{1}{5}$$

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④ Simplify $a^2 \boxed{n^{-3}} \boxed{a^{-4}} n^2$

$\dfrac{a^2}{1} \cdot \dfrac{1}{n^3} \dfrac{1}{a^4} \dfrac{n^2}{1} = \dfrac{a^2 n^2}{n^3 a^4}$

$\dfrac{\cancel{aa}\ \cancel{nn}}{nn\cancel{n}\ \cancel{aa}aa} = \dfrac{1}{na^2}$

⑤ $n^{-1} \cdot n^3$

$\dfrac{n^3}{n} = n^2$

⑥ $\dfrac{\boxed{a^{-2}} c^3}{a^4 \boxed{c^{-1}}} = \dfrac{c^3 c}{a^2 a^4}$

$= \dfrac{c^4}{a^6}$

⑦ $\dfrac{\bigcirc\!\!\!\!a^{-2} b^2 \bigcirc\!\!\!\!c^{-1}}{a^2 \bigcirc\!\!\!\!b^{-3} c}$

$\dfrac{b^2 b^3}{a^2\ c\ a^2 c} = \dfrac{b^5}{a^4 c^2}$

⑧ $\left(\dfrac{a^2}{b}\right)^{-2} = \left(\dfrac{a^2}{b}\right)^{-1 \cdot 2}$

$\left(\dfrac{b}{a^2}\right)^2$

$\dfrac{b}{a^2} \cdot \dfrac{b}{a^2} = \dfrac{b^2}{a^4}$

⑨ $\left(\dfrac{3a}{5y^2}\right)^{-2} = \left(\dfrac{3a}{5y^2}\right)^{-1 \cdot 2}$

$\left(\dfrac{5y^2}{3a}\right)^2$

$\dfrac{5y^2}{3a} \cdot \dfrac{5y^2}{3a} = \dfrac{25y^4}{9a^2}$

9-5-13

4th Trig

What does $\dfrac{a^2b}{ab^3}$ mean?

$$\dfrac{\cancel{a}\,a\,\cancel{b}}{\cancel{a}\,\cancel{b}\,b\,b} = \dfrac{a}{b^2}$$

Simplify $\dfrac{a^2b^2c}{a^3bc^2}$

$$\dfrac{\cancel{a}\,\cancel{a}\,\cancel{b}\,b\,\cancel{c}}{a\,\cancel{a}\,\cancel{a}\,\cancel{b}\,\cancel{c}\,c} = \dfrac{b}{ac}$$

① Simplify $\dfrac{4a^3}{6a^5}$

$$\dfrac{\overset{2}{\cancel{4}}\,\cancel{a}\,\cancel{a}\,\cancel{a}}{\underset{3}{\cancel{6}}\,\cancel{a}\,\cancel{a}\,\cancel{a}\,a\,a} \qquad \dfrac{2}{3a^2}$$

② Simplify $\dfrac{-6a^3b}{8ab}$

$$\dfrac{-\overset{3}{\cancel{6}}\,\cancel{a}\,a\,a\,\cancel{b}}{\underset{4}{\cancel{8}}\,\cancel{a}\,\cancel{b}} = \dfrac{-3a^2}{4}$$

What does a^{-2} mean?

$$\dfrac{1}{a^2}$$

$\therefore$ $3^{-2} = \dfrac{1}{3^2} = \dfrac{1}{9}$

$2^{-2} = \dfrac{1}{2^2} = \dfrac{1}{4}$

$10^{-3} = \dfrac{1}{10^3} = \dfrac{1}{1000}$

Simplify $a^5 \cdot a^{-2}$

$$\frac{a^5}{a^2} = \frac{a\,a\,a\,a\,a}{a\,a} = a^3$$

④ Simplify $\boxed{a^{-3}} b^2 \cdot a^2 \cdot \boxed{b^{-4}}$

$$\frac{b^2 \cdot a^2}{a^3 \, b^4} = \frac{1}{a \, b^2}$$

⑤ Simplify $\dfrac{\boxed{a^{-3}} \, b}{a^2 \, \boxed{b^{-1}}}$

$$\frac{b \, b}{a^3 \, a^2} = \frac{b^2}{a^5}$$

⑥ Simplify $\dfrac{a^2 \, \boxed{b^{-3}} \, c}{\boxed{a^{-1}} \, b \, \boxed{c^{-4}}}$

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

$$\frac{a^3 \, c^5}{b^4}$$

⑦ Simplify $\dfrac{a^{-2} \, b}{a^{-3} \, b^{-2}}$

$$\frac{a^3 \, b \, b^2}{a^2} = a b^3$$

⑧ Simplify $\left(\dfrac{a^2}{3}\right)^{-2} = \left(\dfrac{a^2}{3}\right)^{-1 \cdot 2}$

$$\left(\frac{3}{a^2}\right)^2 = \frac{3}{a^2} \cdot \frac{3}{a^2} = \frac{9}{a^4}$$

⑨ Simplify $\left(\dfrac{a^3}{b^2}\right)^{-2}$

$$\left(\frac{a^3}{b^2}\right)^{-1 \cdot 2} = \left(\frac{b^2}{a^3}\right)^2 = \frac{b^2}{a^3} \cdot \frac{b^2}{a^3} = \frac{b^4}{a^6}$$

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