

January 7th 2015

Due Today: HW 6.1
Due Next Class: HW 6.2

Unit 6: Exponents and Radicals

Lesson: 6.2: More Exponents

Get Ready: Look at the work at your table. With your group members, spot the mistake in each problem.

1) $-2x^{-2} \cdot -3x^{-3} \cdot -x^4$

$-6 \cdot x^{-2-3+4}$

$(-6x^{-1})$

$\frac{1}{6x}$

$\frac{-6}{x}$

2) $(-2n^0v^4)^2$
 $\frac{4}{1v^8}$

3) $\frac{-2x^3}{x^{-4}y^2}$

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

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

$3 + +4$

$x >$

4) $\frac{(-2n^3)^4}{(2n^{-3})^3}$
 $\frac{-8n^{12}}{6n^{-9}}$
 $\frac{-4n^{21}}{3n^{-9}}$

$\frac{-4n^{21}}{3}$

$\frac{(-2)^4}{2^3} = \frac{16}{8}$

5) $(-2m^{-2}n^4 \cdot 2m^4)^4$

$16m^{-8}n^{16} \cdot 16m^{16}$

$16^2 m^8 n^{16}$

256

Homework Answers

1) $20a^6$

2) $2b^3$

3) $\frac{5n}{6}$

4) $32x^{20}$

5) $\frac{4}{m^3}$

6) $25x^5$

7) $\frac{6x}{y^3}$

8) $\frac{1}{u^6}$

9) $\frac{4y^7x}{3}$

10) $\frac{8y^3}{xz^2}$

11) $\frac{64}{r^6}$

12) $\frac{1}{p^{16}}$

13) $\frac{16m^{11}}{n^{14}}$

14) $4m^3n^8$

15) $\frac{1}{y^3}$

16) $\frac{y^{16}}{x^{16}}$

⑩ $\left(\frac{x \cdot x^{-1} y^4}{x^4 y^0} \right)^4$ PMDZN

$$\frac{x^4 \cdot x^{-4} y^{16}}{x^{16} y^0} = \frac{x^0 y^{16}}{x^{16} y^0} = x^{-16} y^{16}$$

$$\frac{y^{16}}{x^{16}}$$

① $\frac{4xy^4}{3y^{-3}}$

PMDZN

$$\frac{4xy^7}{3}$$

$4 + +3$

$x^1 \cdot x^2$
 x^3

$$\textcircled{15} \frac{2xy^{-3} \cdot (xy)^2}{2x^3y^2}$$

PMDZN

$$\frac{2x^1y^{-3} \cdot x^2y^2}{2x^3y^2} = \frac{\cancel{2}x^{\cancel{1}+2}y^{-\cancel{3}+2}}{\cancel{2}x^3y^{\cancel{2}}}$$

$$= \frac{x^{-1}y^{-1}}{x^3y^0}$$

$$y^{-3} = \frac{1}{y^3}$$

$$\textcircled{13} m^3 n^2 \cdot (2m^2 n^{-4})^4$$

$$m^3 n^2 \cdot 16m^8 n^{-16}$$

$$16m^{11} n^{-14}$$

$$\frac{16m^{11}}{n^{14}}$$

Power rule with a negative exponent

$$\begin{aligned}
 & 3^{-3} x^{-6} \\
 & \frac{1}{3^3 x^6} = \frac{1}{27x^6} \\
 & \frac{1}{(3x^2)^3} \\
 & \frac{1}{27x^6}
 \end{aligned}$$

The image shows a handwritten derivation of the power rule for negative exponents. It starts with the expression $3^{-3} x^{-6}$. This is converted to a fraction $\frac{1}{3^3 x^6}$. The denominator is simplified to $27x^6$, resulting in $\frac{1}{27x^6}$. This result is boxed in red. Above this, the expression $(3x^2)^3$ is circled in green, with a red '3' next to it. To the right, another fraction $\frac{1}{(3x^2)^3}$ is written in green, with a red '3' next to it. Below this, the simplified fraction $\frac{1}{27x^6}$ is boxed in green.

More Exponent Practice

Level 1

1) $2n^{-3} \cdot (n^{-3})^2$

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

3) $\frac{x^3 y^{-3} \cdot 4y^{-2}}{x^0 y^{-1}}$

Level 2

4) $2n^0 \cdot (m^{-3} n^2)^4 \cdot m^2 n^4$

5) $\frac{(x^{-3})^2}{x^{-2} y^3}$

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

Level 3

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

8) $\left(\frac{y^{-3}}{(x^{-1} y^{-2})^2 \cdot (x^{-3} y^0)^0}\right)^3$

9) $\frac{(2m^3 n^3)^4}{2m^4 n^{-3} p^0 \cdot 2pm^4 n^4}$

Level 4

10) $\frac{a^0 c^{-2}}{(b^{-4} c^3 \cdot -2bc^3)^2}$

11) $\frac{2m^2 n^2 p^4}{-2np^2 \cdot (2m^2 n^3 p^4)^{-3}}$

12) $\frac{(-a^3 b^4)^0 \cdot a^3 b^{-4} c^{-4}}{-ab^{-2} \cdot 2abc^{-4}}$

$$7) \left(\frac{b^{-1} \cdot a^{-3} b^{-2}}{2a^2 b^4} \right)^{-3}$$

PMDZN

$$\frac{b^3 a^9 b^6}{2^{-3} a^{-6} b^{-12}} = \frac{a^9 b^9}{2^{-3-6} b^{-12}} = \frac{a^{15} b^{21}}{2^{-3}} \quad \begin{matrix} 9+6 \\ 9+12 \end{matrix}$$

$$2^3 a^{15} b^{21} = \boxed{8 a^{15} b^{21}}$$

HW 6.2

Level 1

1) $2n^{-3} \cdot (n^{-3})^2$

$$\frac{2n^{-3} \cdot n^{-6}}{2n^{-9}}$$

$$2n^{-9}$$

$$\boxed{\frac{2}{n^9}}$$

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

$$\frac{v^{12}}{8v^{12}}$$

$$\begin{array}{r} 12 - 12 \\ = 0 \end{array}$$

$$\frac{v^0}{8}$$

$$\boxed{\frac{1}{8}}$$

3) $\frac{x^3 y^{-3} \cdot 4y^{-2}}{x^0 y^{-1}}$

$$\frac{4x^3 y^{-5}}{x^0 y^{-1}}$$

$$\begin{array}{r} -5 + 1 \\ -4 \end{array}$$

$$4^3 x y^{-4}$$

$$\boxed{\frac{4x^3}{y^4}}$$

Recap

Homework:

Today in MATH

Next Class: