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Negative Exponents

Reduce each of the following and express with positive exponents

1. $\dfrac{14x^{-2}y^3}{-8x^{-5}y^5}$ $\dfrac{7x^5y^3}{4x^2y^5}$ $\boxed{\dfrac{7x^3}{4y^2}}$

$\dfrac{1}{4}$

2. $(3y)^2\,(3zy^4)^{-2}$

$3^2y^2\,3^{-2}z^{-2}y^{-8}$ $\dfrac{9y^2}{9z^2y^6}$

$\boxed{\dfrac{1}{y^6z^2}}$

3. $\dfrac{x^2y^{-3}}{x^{-3}y^{-2}}$ $\dfrac{x^2x^3y^2}{y^3}$ $\dfrac{x^5}{y}$

4. $\dfrac{(x^2y)^0}{(x^3y^0)^{-3}}$

$\dfrac{1}{x^{-9}y^0} = x^9$

5. Which expression is equivalent to $\dfrac{x^{-1}y^4}{3x^{-5}y^{-1}}$?

1) $\dfrac{x^4y^5}{3}$ 3) $3x^4y^5$

2) $\dfrac{x^5y^4}{3}$ 4) $\dfrac{y^4}{3x^5}$

$\dfrac{y^4x^5y}{3x^1} = \dfrac{x^4y^5}{3}$

6. Which expression is equivalent to $x^{-1}\cdot y^2$?

(1) xy^2 (3) $\dfrac{x}{y^2}$

(2) $\dfrac{y^2}{x}$ (4) xy^{-2}

$\dfrac{y^2}{x^1}$

7. The expression $\dfrac{a^2b^{-3}}{a^{-4}b^2}$ is equivalent to

1) $\dfrac{a^6}{b^5}$ 3) $\dfrac{a^2}{b}$

2) $\dfrac{b^5}{a^6}$ 4) $a^{-2}b^{-1}$

$\dfrac{a^2a^4}{b^3b^2}$ $\dfrac{a^6}{b^5}$

8. Which expression is equivalent to $\dfrac{2x^{-2}y^{-2}}{4y^{-5}}$?

$\dfrac{1 \cdot y^{5} \cdot 3}{2x^{2}y^{2}} = \dfrac{y^{3}}{2x^{2}}$

1) $\dfrac{y^{3}}{2x^{2}}$ 3) $\dfrac{2x^{2}}{y^{3}}$

2) $\dfrac{2y^{3}}{x^{2}}$ 4) $\dfrac{x^{2}}{2y^{3}}$

9. Which expression is equivalent to $\left(3x^{2}\right)^{-1}$?

$3^{-1}x^{-2}$ $\dfrac{1}{3x^{2}}$

1) $\dfrac{1}{3x^{2}}$ 3) $\dfrac{1}{9x^{2}}$

2) $-3x^{2}$ 4) $-9x^{2}$

10. The expression $(2a)^{-4}$ is equivalent to

$2^{-4}a^{-4}$ $\dfrac{1}{16a^{4}}$

1) $-8a^{4}$ 3) $-\dfrac{2}{a^{4}}$

2) $\dfrac{16}{a^{4}}$ 4) $\dfrac{1}{16a^{4}}$

11. Which expression is equivalent to $(5^{-2}a^{3}b^{-4})^{-1}$?

$5^{2}a^{-3}b^{4}$ $\dfrac{25b^{4}}{a^{3}}$

1) $\dfrac{10b^{4}}{a^{3}}$ 3) $\dfrac{a^{3}}{25b^{4}}$

2) $\dfrac{25b^{4}}{a^{3}}$ 4) $\dfrac{a^{2}}{125b^{5}}$

12. Simplify the expression $\dfrac{3x^{-4}y^{5}}{(2x^{3}y^{-7})^{-2}}$ and write the answer using only positive exponents.

$\dfrac{3x^{-4}y^{5}}{2^{-2}x^{-6}y^{14}}$ $\dfrac{3(4)y^{5}x^{6}}{x^{4}y^{14}}$ $\dfrac{3(4)x^{6}y^{5}}{x^{4}y^{14 \cdot 9}}$ $\dfrac{12x^{2}}{y^{9}}$

13. Simplify the expression $\dfrac{(3x^{-2})^{0}}{(2x^{2})(2y)^{-3}}$ and write your answer using a positive exponent.

$\dfrac{3^{0}x^{0}}{(2x^{2})(2^{-3}y^{-3})}$ $\dfrac{1(2^{3})(y^{3})}{2x^{2}} = \dfrac{8y^{3}}{16x^{2}} = \dfrac{4y^{3}}{x^{2}}$