

A2.A.9: Negative and Fractional Exponents: Rewrite algebraic expressions that contain negative exponents using only positive exponents

1 Which expression is equivalent to x^{-4} ?

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

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

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

3 Which expression is equivalent to $\frac{2x^{-2}y^{-2}}{4y^{-5}}$?

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

4 Which expression is equivalent to $\frac{x^{-1}y^2}{x^2y^{-4}}$?

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

5 The expression $\frac{a^2b^{-3}}{a^{-4}b^2}$ is equivalent to

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

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

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

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

- 1) $\frac{10b^4}{a^3}$
- 2) $\frac{25b^4}{a^3}$
- 3) $\frac{a^3}{25b^4}$
- 4) $\frac{a^2}{125b^5}$

8 Which equation is equivalent to $y = 10^x$?

- 1) $y = -10^{-x}$
- 2) $y = 10^{-x}$
- 3) $y = \left(\frac{1}{10}\right)^{-x}$
- 4) $y = \left(\frac{1}{10}\right)^x$

9 When $x^{-1} + 1$ is divided by $x + 1$, the quotient equals

- 1) 1
- 2) $\frac{1}{x}$
- 3) x
- 4) $-\frac{1}{x}$

10 When $x^{-1} - 1$ is divided by $x - 1$, the quotient is

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

11 In simplest form, express $\frac{x+y^{-1}}{y+x^{-1}}$ with no negative exponents.

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

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Answer Section

1 ANS: 1 REF: 010511a

2 ANS: 2 REF: 080119a

3 ANS: 1 REF: 061324a2

4 ANS: 4 REF: 061506a2

5 ANS: 1 REF: fall0914a2

6 ANS: 1 REF: 061210a2

7 ANS: 2

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

REF: 011514a2

8 ANS: 3 REF: 019515siii

9 ANS: 2

$$\frac{x^{-1} + 1}{x + 1} = \frac{\frac{1}{x} + 1}{x + 1} = \frac{\frac{1 + x}{x}}{x + 1} = \frac{1}{x}$$

REF: 011211a2

10 ANS: 2

$$\frac{x^{-1} - 1}{x - 1} = \frac{\frac{1}{x} - 1}{x - 1} = \frac{\frac{1 - x}{x}}{x - 1} = \frac{\frac{-(x - 1)}{x}}{x - 1} = -\frac{1}{x}$$

REF: 081018a2

11 ANS:

$$\frac{x}{y}$$

REF: 010141siii

12 ANS:

$$\frac{12x^2}{y^9} \cdot \frac{3x^{-4}y^5}{(2x^3y^{-7})^{-2}} = \frac{3y^5(2x^3y^{-7})^2}{x^4} = \frac{3y^5(4x^6y^{-14})}{x^4} = \frac{12x^6y^{-9}}{x^4} = \frac{12x^2}{y^9}$$

REF: 061134a2