

1. If the expression $(2y^a)^4$ is equivalent to $16y^8$, what is the value of a ?

1. 12 2. 2
3. 32 4. 4

$$\underline{2^4} y^{4a} = \underline{16} y^8$$

$$4a = 8$$

$$\underline{a = 2}$$

2. The expression $\frac{12w^9y^3}{-3w^3y^3}$ is equivalent to

1. $-4w^6$
2. $-4w^3y$
3. $9w^6$
4. $9w^3$

$$-4w^{9-3}y^{3-3}$$

$$-4w^6$$

3. Express in simplest form: $\frac{45a^4b^3 - 90a^3b}{15a^2b}$

1. $3a^2b^2 - 6ab$

2. $3a^2b^2 - 1$

3. $3a^2b^3 - 6a$

4. $3a^2b^2 - 6a$

$$\frac{45a^4b^3}{15a^2b} - \frac{90a^3b}{15a^2b}$$

$$= \underline{3a^2b^2 - 6a}$$

4. The product of $3x^5$ and $2x^4$ is

1. $5x^9$

2. $5x^{20}$

3. $6x^9$

4. $6x^{20}$

$$\underbrace{3 \times 2}_{6} x^{5+4} = 6x^9$$

5. Which expression is *not* equal to 1?

$$1. \frac{6^5}{6^3 \cdot 6^2} = \frac{6^5}{6^5} = 1$$

$$2. \frac{3!}{6} = \frac{3 \cdot 2 \cdot 1}{6} = 1$$

$$3. 6^0 = 1$$

$$4. \frac{6^6}{6^2 \cdot 6^3} = \frac{6^6}{6^5} = 6$$

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

$$1. \frac{10b^4}{a^3}$$

$$2. \frac{25b^4}{a^3}$$

$$3. \frac{a^3}{25b^4}$$

$$4. \frac{a^2}{125b^5}$$

$$\begin{aligned} & 5^2 a^3 b^4 \\ &= \frac{25b^4}{a^3} \end{aligned}$$

7. 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. $\frac{y^4}{3x^5}$

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

8. Find the quotient of the following expression:

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

① $\frac{2}{3y}$

2. $6y$

3. $\frac{2}{3xy}$

4. $\frac{1}{3y}$

$$\frac{\cancel{2}^2 \cancel{x}^6 \cancel{y}^8}{\cancel{6}^3 \cancel{x}^6 \cancel{y}^9} = \frac{2}{3y}$$

9. Simplify the expression $\frac{x^{5/3}y^{3/2}}{x^{2/3}y^{5/2}}$ and leave the

answer in terms of positive exponents, only.

1. $\frac{x}{y}$

2. $\frac{y}{x}$

3. xy

4. $(xy)^2$

$$x^{5/3-2/3} y^{3/2-5/2} = x^1 y^{-1} \rightarrow \frac{x}{y}$$

10. Simplify the expression $(3x^{-2}y^3)^{-2}(2x^{-6}y^2)$ so that it uses positive exponents, only.

1. $\frac{1}{9x^2y^4}$

2. $\frac{2x^2y^4}{9}$

3. $\frac{2}{9x^2y^4}$

4. $\frac{2y^4}{9x^2}$

$$3^{-2} x^4 y^{-6} \cdot 2x^{-6} y^2 = \frac{2}{9} x^{-2} y^{-4} = \frac{2}{9x^2y^4}$$