

EXERCISE 2: Answers for this exercise start on page 317.

1

Which expression is equivalent to $3xy^6 + 3x^3y^3$?

- A) $3xy^3(y^2 + x^2)$
B) $3xy^3(y^2 + x^3)$
C) $3xy^3(y^3 + x^2)$
D) $3xy^3(y^3 + x^3)$

2

Which expression is equivalent to $(5a + 3\sqrt{a}) - (2a + 5\sqrt{a})$?

- A) $-2a\sqrt{a}$
B) $a\sqrt{a}$
C) $3a - 2\sqrt{a}$
D) $3a + 8\sqrt{a}$

3

Which expression is equivalent to $\frac{2}{x} - \frac{1}{3x}$, where $x > 0$?

- A) $-\frac{1}{2x}$
B) $\frac{2}{x}$
C) $\frac{2}{3x}$
D) $\frac{5}{3x}$

4

Which expression is equivalent to $(x - 8)(5 - 3x^2)$?

- A) $-3x^3 - 6x^2 + 24$
B) $-3x^3 + 11x^2 + 5x - 40$
C) $-3x^3 + 24x^2 + 5x - 40$
D) $-3x^3 + 29x^2 + 24$

5

Which expression is equivalent to $\frac{x^2 - 3}{x + \sqrt{3}}$, where $x \neq -\sqrt{3}$?

- A) $\frac{x\sqrt{3}}{3}$
B) $x - 1$
C) $x - \sqrt{3}$
D) $x + \sqrt{3}$

6

$$(4x^2 + 4x - 1)(x^2 - 3x)$$

If the given expression is rewritten in the form $ax^4 + bx^3 + cx^2 + dx$, where a, b, c , and d are constants, what is the value of $b + c$?

-21

7

Which expression is equivalent to $5b - \frac{b+k}{b}$, where $b > 0$?

- A) $\frac{4b - k}{b}$
B) $\frac{4b + k}{b}$
C) $\frac{5b^2 - b - k}{b}$
D) $\frac{5b^2 - b + k}{b}$

8

The expression $\frac{(6x+8)(3x+6)}{12x+24}$ is equivalent to $\frac{ax+b}{2}$, where a and b are constants and $x > 0$.

What is the value of $a+b$? $= 17$

$$\begin{array}{l} 6, 8 \quad 2 \quad 2(3x+4) \\ 3, 6 \quad 3 \quad 3(x+2) \\ 12, 24 \quad 12 \quad 12(x+2) \end{array}$$

9

Which expression is equivalent to $(3\sqrt{a} - \sqrt{b})^{\frac{2}{3}}$, where $a > b$ and $b > 0$?

- A) $\sqrt[3]{9a-b}$
 B) $\sqrt[3]{9a-6ab+b}$
 C) $\sqrt[3]{9a-3\sqrt{ab}+b}$
 D) $\sqrt[3]{9a-6\sqrt{ab}+b}$

10

Which expression is equivalent to $x^4 - 8x^2 + 16$?

- A) $(x-2)^4$
 B) $(x-2)^3(x+2)$
 C) $(x-2)^2(x+2)^2$
 D) $(x^2+4)(x+2)(x-2)$

11

Which expression is equivalent to

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

- A) $\frac{2x-3xy+4y}{2x^2-2xy}$
 B) $\frac{2x+3xy+y}{2x^2-2xy}$
 C) $\frac{2x+3xy+y}{2x^3-4x^2y+2xy^2}$
 D) $\frac{4y-3xy+1}{2x^3-4x^2y+2xy^2}$

$$2(3x+4) \cdot 3(x+2)$$

$$2(3x+4) \cdot 3(x+2)$$

$$\frac{3x-y}{2}$$

12

The expression $8x^2 - \frac{1}{2}y^2$ is equivalent to $8(x-cy)(x+cy)$, where c is a positive constant. What is the value of c ?

- A) $\frac{1}{16}$
 B) $\frac{1}{8}$
 C) $\frac{1}{4}$
 D) $\frac{\sqrt{2}}{4}$

13

Which expression is equivalent to $(x+1)^2 + 2(x+1)(y+1) + (y+1)^2$?

- A) $(x+y+1)^2$
 B) $(x+y+2)^2$
 C) $(x+y)^2 + 2$
 D) $(x+y)^2 - x - y$

14

Which expression is equivalent to

$$\frac{x}{x-2} + \frac{x}{2(2-x)}, \text{ where } x \neq 2?$$

- A) $-\frac{x}{x-2}$
 B) $-\frac{x}{2(x-2)}$
 C) $\frac{x}{2(x-2)}$
 D) $\frac{3x}{2(x-2)}$

$$\begin{aligned} \frac{x}{x-2} - \frac{x}{2(x-2)} &= \frac{2x-x}{2(x-2)} \\ &= \frac{x}{2(x-2)} \end{aligned}$$