

16. Simplify the expression:

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

1. $x^2 y$

2. $x^2 y$

3. $-5x^2 y$

4. $-6x^4 y^2$

$$= 2x \sqrt{x^2 y^2} - 3 \sqrt{x^4 y^2}$$

$$= 2x \cdot x \cdot y - 3x^2 y$$

$$= 2x^2 y - 3x^2 y = -x^2 y$$

11. Simplify the expression:

$$\sqrt{5}(\sqrt{10} + 2\sqrt{5})$$

1. $10 + 5\sqrt{2}$

2. $5 + 10\sqrt{2}$

3. $15\sqrt{2}$

4. $\sqrt{15} + 2\sqrt{10}$

$$\sqrt{50} + 2\sqrt{25}$$

$$5\sqrt{2} + 2 \cdot 5$$

$$5\sqrt{2} + 10$$

4. The expression $\frac{2+\sqrt{3}}{2-\sqrt{3}}$ is equivalent to

1. $11\sqrt{3}$
2. $7-4\sqrt{3}$
3. $7+4\sqrt{3}$
4. $\frac{7+4\sqrt{3}}{7}$

$$\frac{2+\sqrt{3}}{2-\sqrt{3}} = \frac{(2+\sqrt{3})(2+\sqrt{3})}{(2-\sqrt{3})(2+\sqrt{3})}$$

$$= \frac{4+2\sqrt{3}+2\sqrt{3}+3}{1}$$

$$\frac{4+2\sqrt{3}}{2} \quad \frac{4-3}{1}$$

12. Simplify the expression: $3\sqrt{2}(\sqrt{6}-2\sqrt{2})$

1. $3\sqrt{3}-12$
2. $3\sqrt{3}+12$
3. $6\sqrt{3}-12$
4. $6\sqrt{3}+12$

$$3\sqrt{12} - 6\sqrt{4}$$

4 3

$$(2)3\sqrt{3} - (2)6$$

$$6\sqrt{3}-12$$

22. Simplify the expression: $3x\sqrt{90x^2} \cdot y\sqrt{2y^2}$

1. $18xy\sqrt{5}$

2. $18xy\sqrt{5xy}$

3. $18x^2y^2\sqrt{5}$

4. $18x^3y^3\sqrt{5}$

$$= 3xy\sqrt{90 \cdot 2x^2y^2}$$

$$= 3xy\sqrt{3^2 \cdot 5 \cdot 2^2 \cdot x^2 \cdot y^2}$$

$$= 3xy \cdot 3 \cdot 2 \cdot x \cdot y \sqrt{5}$$

$$= 18x^2y^2\sqrt{5}$$

$$\begin{array}{c} 90 \\ \swarrow \searrow \\ 9 \quad 10 \\ \swarrow \searrow \swarrow \searrow \\ (3) (3) 5 \quad 2 \end{array}$$

4. $-5ab\sqrt{2b} + 7ab\sqrt{6b}$

30. Express $5\sqrt{3x^3} - 2\sqrt{27x^3}$ in simplest radical form.

1. $x\sqrt{3x}$

2. $-x\sqrt{3x}$

3. $-\sqrt{3x}$

4. $\sqrt{3x}$

31. Simplify: $\sqrt[3]{54x^4y^5}$

1. $18xy\sqrt[3]{xy^2}$

2. $3xy\sqrt[3]{2xy^2}$

3. $27x^3y^3\sqrt[3]{2xy^2}$

31. Simplify: $\sqrt[3]{54}$

1. $18xy\sqrt[3]{xy^2}$

2. $3xy\sqrt[3]{2xy^2}$

3. $27x^3y^3\sqrt[3]{2}$

31. Simplify: $\sqrt[3]{54x^4y^5}$

1. $18xy\sqrt[3]{xy^2}$

2. $3xy\sqrt[3]{2xy^2}$

3. $27x^3y^3\sqrt[3]{2xy^2}$

4. $3x^2y^2\sqrt[3]{6y}$

Handwritten solution for simplifying $\sqrt[3]{54x^4y^5}$:

$$\sqrt[3]{(27)(2)x^4y^5}$$

The expression is broken down into factors that are perfect cubes and a remaining radicand:

$$3xy\sqrt[3]{2xy^2}$$

23. Simplify the expression: $\frac{5\sqrt{6}}{10\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}$

1. 1
2. $2\sqrt{3}$
3. $\frac{\sqrt{3}}{2}$
4. $\frac{3}{2}$

$$= \frac{5\sqrt{12}}{10\sqrt{4}} = \frac{10\sqrt{3}}{20} = \frac{\sqrt{3}}{2}$$

$$\frac{(5+\sqrt{6})(10-\sqrt{2})}{(10+\sqrt{2})(10-\sqrt{2})}$$

17. Simplify the expression: $(2+\sqrt{2})(\sqrt{2}-4)$

1. $-6 + 2\sqrt{2}$
2. $-6 - 2\sqrt{2}$
3. $6 + 2\sqrt{2}$
4. $6 - 2\sqrt{2}$

$$= 2\sqrt{2} - 8 + \sqrt{4} - 4\sqrt{2}$$

$$= 2\sqrt{2} - 8 + 2 - 4\sqrt{2}$$

$$= -6 - 2\sqrt{2}$$