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CHAPTER-1 | Number System

QUIZ PART-08

1. What is the result of rationalizing the denominator of $\frac{1}{6-\sqrt{3}}$?

A. $\frac{6-\sqrt{3}}{3}$ B. $\frac{6+\sqrt{3}}{33}$
C. $\frac{6-\sqrt{3}}{33}$ D. $\frac{6+\sqrt{3}}{3}$ (D)

Explanation: To rationalize the denominator, multiply both the numerator and denominator by the conjugate of 6 - $\sqrt{3}$, *which is* $6+\sqrt{3}$. This gives the result $\frac{6+\sqrt{3}}{3}$.

2. Rationalize the denominator of $\frac{1}{\sqrt{7}}$. What do we get?

A. $\frac{\sqrt{7}}{7}$ B. $\frac{1}{7}$
C. $\frac{1}{\sqrt{7}}$ D. $\sqrt{7}$ (A)

Explanation: To rationalize $\frac{1}{\sqrt{7}}$, multiply both the numerator and denominator by $\sqrt{7}$, resulting in $\frac{\sqrt{7}}{7}$.

3. When the denominator of $\frac{1}{6+\sqrt{5}}$ is rationalized, the resulting expression is:

A. $\frac{6-\sqrt{5}}{3}$ B. $\frac{6+\sqrt{5}}{33}$
C. $\frac{6+\sqrt{5}}{3}$ D. $\frac{6-\sqrt{5}}{33}$ (A)

Explanation: Rationalizing the denominator involves multiplying the numerator and denominator by 6 - $\sqrt{5}$, wihich results in $\frac{6-\sqrt{5}}{3}$.

Q4. Which of the following is the correct rationalization of $\frac{1}{5+\sqrt{3}}$?

A. $\frac{5-\sqrt{3}}{25-3}$ B. $\frac{5+\sqrt{3}}{5-\sqrt{3}}$
C. $\frac{5-\sqrt{3}}{22}$ D. $\frac{5-\sqrt{3}}{2}$ (A)

Explanation: By multiplying both the numerator and denominator by 5 - $\sqrt{3}$, the result becomes $\frac{5-\sqrt{3}}{25-3} = \frac{5-\sqrt{3}}{22}$.

Q5. Which of the following operations applies to rationalizing denominators in expressions like $\frac{1}{\sqrt{a}}$?

A. Multiply by $\sqrt{a}$ B. Multiply by a
C. Divide by $\sqrt{a}$ D. Subtract by $\sqrt{a}$ (A)

Explanation: To rationalize the denominator, multiply both the numerator and denominator by $\sqrt{a}$, thus rationalizing the denominator.

6. Which expression is equivalent to $\frac{1}{\sqrt{5}-2}$ after rationalizing the denominator?

A. $\frac{\sqrt{5}+2}{5-4}$ B. $\frac{\sqrt{5}-2}{3}$
C. $\frac{\sqrt{5}+2}{3}$ D. $\frac{5+2}{\sqrt{5}}$. (A)

Explanation: To rationalize $\frac{1}{\sqrt{5}-2}$, multiply both the numerator and denominator by $\sqrt{5}+2$, resulting in $\frac{\sqrt{5}+2}{5-4}$.

7. In $\frac{1}{3+\sqrt{2}}$, rationalizing the denominator gives:

A. $\frac{3-\sqrt{2}}{7}$ B. $\frac{3+\sqrt{2}}{9}$
C. $\frac{3-\sqrt{2}}{5}$ D. None of the above (A)

Explanation: Rationalizing involves multiplying by the conjugate 3 - $\sqrt{2}$, which simplifies to $\frac{3-\sqrt{2}}{7}$.

8. The rationalized form of $\frac{1}{\sqrt{3}-\sqrt{2}}$ is:

A. $\frac{\sqrt{3}+\sqrt{2}}{3-2}$ B. $\frac{\sqrt{3}-\sqrt{2}}{1}$
C. $\frac{\sqrt{3}+\sqrt{2}}{1}$ D. None of the above (A)

Explanation: The correct rationalization is $\frac{\sqrt{3}+\sqrt{2}}{1}$, as multiplying the numerator and denominator by $\sqrt{3}+\sqrt{2}$ simplifies the denominator to 1.

9. Which operation is required to rationalize the denominator of $\frac{1}{\sqrt{2}+3}$?

A. Multiply by $\sqrt{2}-3$ B. Multiply by $\sqrt{2}+3$
C. Divide by $\sqrt{2}-3$ D. Add $\sqrt{2}$ (A)

Explanation: To rationalize $\frac{1}{\sqrt{2}+3}$, we multiply both the numerator and denominator by $\sqrt{2}-3$.

10. Rationalize the denominator of $\frac{1}{\sqrt{7}-2}$. What is the result?

A. $\frac{\sqrt{7}+2}{7-4}$ B. $\frac{\sqrt{7}-2}{5}$
C. $\frac{\sqrt{7}+2}{5}$ D. $\frac{\sqrt{7}+2}{7}$ (A)

Explanation: The rationalized form of $\frac{1}{\sqrt{7}-2}$ is $\frac{\sqrt{7}+2}{7-4} = \frac{\sqrt{7}+2}{3}$.

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