

A2.N.5: Rationalizing Denominators 1: Rationalize a denominator containing a radical expression

1 The expression $\frac{3 - \sqrt{8}}{\sqrt{3}}$ is equivalent to

- 1) $\frac{\sqrt{3} - 2\sqrt{6}}{\sqrt{3}}$
- 2) $-\sqrt{3} + \frac{2}{3}\sqrt{6}$
- 3) $\frac{3 - \sqrt{24}}{3}$
- 4) $\sqrt{3} - \frac{2}{3}\sqrt{6}$

4 The expression $\frac{11}{\sqrt{3} - 5}$ is equivalent to

- 1) $\frac{-\sqrt{3} - 5}{2}$
- 2) $\frac{-\sqrt{3} + 5}{2}$
- 3) $\frac{\sqrt{3} - 5}{2}$
- 4) $\frac{\sqrt{3} + 5}{2}$

2 Which expression is equivalent to $\frac{4}{3 + \sqrt{2}}$?

- 1) $\frac{12 + 4\sqrt{2}}{7}$
- 2) $\frac{12 + 4\sqrt{2}}{11}$
- 3) $\frac{12 - 4\sqrt{2}}{7}$
- 4) $\frac{12 - 4\sqrt{2}}{11}$

5 The expression $\frac{7}{3 - \sqrt{2}}$ is equivalent to

- 1) $\frac{3 + \sqrt{2}}{7}$
- 2) $\frac{21 + \sqrt{2}}{7}$
- 3) $3 + \sqrt{2}$
- 4) $3 - \sqrt{2}$

3 The expression $\frac{7}{2 - \sqrt{3}}$ is equivalent to

- 1) $14 - 7\sqrt{3}$
- 2) $14 + 7\sqrt{3}$
- 3) $\frac{2 + \sqrt{3}}{7}$
- 4) $\frac{14 + \sqrt{3}}{7}$

6 The expression $\frac{1}{5 - \sqrt{13}}$ is equivalent, to

- 1) $\frac{5 + \sqrt{13}}{12}$
- 2) $\frac{5 + \sqrt{13}}{-12}$
- 3) $\frac{5 + \sqrt{13}}{8}$
- 4) $\frac{5 + \sqrt{13}}{-8}$

7 The expression $\frac{5}{\sqrt{5}-1}$ is equivalent to

- 1) $\frac{5}{4}$
- 2) $\frac{5\sqrt{5}+5}{4}$
- 3) $\frac{5\sqrt{5}-5}{4}$
- 4) $\frac{5\sqrt{5}-5}{6}$

8 The expression $\frac{12}{3+\sqrt{3}}$ is equivalent to

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

9 The expression $\frac{4}{5-\sqrt{13}}$ is equivalent to

- 1) $\frac{4\sqrt{13}}{5\sqrt{13}-13}$
- 2) $\frac{4(5-\sqrt{13})}{38}$
- 3) $\frac{5+\sqrt{13}}{3}$
- 4) $\frac{4(5+\sqrt{13})}{38}$

10 The fraction $\frac{3}{\sqrt{6}-1}$ is equivalent to

- 1) $3\sqrt{6}+3$
- 2) $3\sqrt{6}-3$
- 3) $\frac{3\sqrt{6}+3}{5}$
- 4) $\frac{3\sqrt{6}-3}{5}$

11 The expression $\frac{2}{1-\sqrt{3}}$ is equivalent to

- 1) $1 + \sqrt{3}$
- 2) $1 - \sqrt{3}$
- 3) $-1 + \sqrt{3}$
- 4) $-1 - \sqrt{3}$

12 The expression $\frac{5}{3+\sqrt{2}}$ is equivalent to

- 1) $\frac{\sqrt{2}-15}{3}$
- 2) $\frac{5\sqrt{2}-15}{5}$
- 3) $\frac{15-5\sqrt{2}}{7}$
- 4) $15-5\sqrt{2}$

13 The expression $\frac{1}{7 - \sqrt{11}}$ is equivalent to

- 1) $\frac{7 + \sqrt{11}}{38}$
- 2) $\frac{7 - \sqrt{11}}{38}$
- 3) $\frac{7 + \sqrt{11}}{60}$
- 4) $\frac{7 - \sqrt{11}}{60}$

14 The expression $\frac{5}{4 - \sqrt{11}}$ is equivalent to

- 1) $4 + \sqrt{11}$
- 2) $\frac{20 + 5\sqrt{11}}{27}$
- 3) $4 - \sqrt{11}$
- 4) $\frac{20 - 5\sqrt{11}}{27}$

15 Which expression is equivalent to $\frac{\sqrt{3} + 5}{\sqrt{3} - 5}$?

- 1) $-\frac{14 + 5\sqrt{3}}{11}$
- 2) $-\frac{17 + 5\sqrt{3}}{11}$
- 3) $\frac{14 + 5\sqrt{3}}{14}$
- 4) $\frac{17 + 5\sqrt{3}}{14}$

16 Which expression is equal to $\frac{2 + \sqrt{3}}{2 - \sqrt{3}}$?

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

17 The expression $\frac{5 + \sqrt{7}}{5 - \sqrt{7}}$ is equivalent to

- 1) $\frac{16 + 5\sqrt{7}}{16}$
- 2) $\frac{16 + 5\sqrt{7}}{9}$
- 3) $\frac{16 - 5\sqrt{7}}{16}$
- 4) $\frac{16 - 5\sqrt{7}}{9}$

18 Which expression is equivalent to $\frac{\sqrt{7} + \sqrt{2}}{\sqrt{7} - \sqrt{2}}$?

- 1) $\frac{9}{5}$
- 2) -1
- 3) $\frac{9 + 2\sqrt{14}}{5}$
- 4) $\frac{11 + \sqrt{2}}{14}$

A2.N.5: Rationalizing Denominators 1: Rationalize a denominator containing a radical expression

Answer Section

1 ANS: 4

$$\frac{3-\sqrt{8}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}-\sqrt{24}}{3} = \frac{3\sqrt{3}-2\sqrt{6}}{3} = \sqrt{3} - \frac{2}{3}\sqrt{6}$$

REF: 081518a2

2 ANS: 3 REF: 060305b

3 ANS: 2 REF: 010405b

4 ANS: 1 REF: 080420b

5 ANS: 3 REF: 010516b

6 ANS: 1 REF: 080506b

7 ANS: 2 REF: 010613b

8 ANS: 2 REF: 080606b

9 ANS: 3

$$\frac{4}{5-\sqrt{13}} \cdot \frac{5+\sqrt{13}}{5+\sqrt{13}} = \frac{4(5+\sqrt{13})}{25-13} = \frac{5+\sqrt{13}}{3}$$

REF: 061116a2

10 ANS: 3 REF: 060709b

11 ANS: 4 REF: 080716b

12 ANS: 3 REF: 010902b

13 ANS: 1

$$\frac{1}{7-\sqrt{11}} \cdot \frac{7+\sqrt{11}}{7+\sqrt{11}} = \frac{7+\sqrt{11}}{49-11} = \frac{7+\sqrt{11}}{38}$$

REF: 011404a2

14 ANS: 1

$$\frac{5}{4-\sqrt{11}} \cdot \frac{4+\sqrt{11}}{4+\sqrt{11}} = \frac{5(4+\sqrt{11})}{16-11} = \frac{5(4+\sqrt{11})}{5} = 4+\sqrt{11}$$

REF: 061509a2

15 ANS: 1

$$\frac{\sqrt{3}+5}{\sqrt{3}-5} \cdot \frac{\sqrt{3}+5}{\sqrt{3}+5} = \frac{3+5\sqrt{3}+5\sqrt{3}+25}{3-25} = \frac{28+10\sqrt{3}}{-22} = -\frac{14+5\sqrt{3}}{11}$$

REF: 061012a2

16 ANS: 4 REF: 080307b

17 ANS: 2 REF: 060905b

18 ANS: 3 REF: fall9906b