

Math 2 Unit 3.4 Example Divide Radicals with Rationalize the Denominator

Simplify.

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

2)
$$\frac{5\sqrt{5}}{5\sqrt{3} - 3\sqrt{5}}$$

3)
$$\frac{3}{4 + 2\sqrt{3}}$$

4)
$$\frac{3\sqrt{3}}{3 - 4\sqrt{5}}$$

5)
$$\frac{5}{5\sqrt{3} - 2}$$

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

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

8)
$$\frac{5\sqrt{5} - 3\sqrt{3}}{2\sqrt{2} + 5\sqrt{5}}$$

9)
$$\frac{5\sqrt{2} + 5}{5\sqrt{5} + 2\sqrt{3}}$$

10)
$$\frac{5 - 5\sqrt{2}}{4\sqrt{3} + 5}$$

11)
$$\frac{3 - 2\sqrt{3}}{-5 + 3\sqrt{3}}$$

12)
$$\frac{3 - 3\sqrt{2}}{3\sqrt{5} + 5}$$

13)
$$-\frac{1}{2v + 2\sqrt{5v^3}}$$

14)
$$\frac{3n}{-4n^2 - 5\sqrt{3n^4}}$$

15)
$$\frac{2m}{-4 - 4\sqrt{3m^2}}$$

16)
$$\frac{3m^2}{-5m^4 + 3\sqrt{5m}}$$

17)
$$-\frac{k}{2 + 3\sqrt{2k^3}}$$

18)
$$\frac{5\sqrt{5x^4}}{2x + 2\sqrt{5x^3}}$$

19)
$$\frac{3\sqrt{2k^2} + 2\sqrt{3k^4}}{3k - 2\sqrt{k}}$$

20)
$$\frac{-1 - 3\sqrt{2a^4}}{2\sqrt{5a^3} + 3\sqrt{2a^3}}$$

21)
$$\frac{5x - 4\sqrt{3x}}{3 - 4\sqrt{x^4}}$$

22)
$$\frac{3\sqrt{r^2} - 2\sqrt{5r^2}}{4 + 5\sqrt{3r^4}}$$

23)
$$\frac{5 - 2\sqrt{3a^2}}{5a^2 - 3\sqrt{5a^2}}$$

24)
$$\frac{-3 - 2\sqrt{2v^4}}{-1 + 4\sqrt{5v}}$$

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Simplify.

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

$$\frac{4 + 16\sqrt{2}}{31}$$

$$2) \frac{5\sqrt{5}}{5\sqrt{3} - 3\sqrt{5}}$$

$$\frac{5\sqrt{15} + 15}{6}$$

$$3) \frac{3}{4 + 2\sqrt{3}}$$

$$\frac{6 - 3\sqrt{3}}{2}$$

$$4) \frac{3\sqrt{3}}{3 - 4\sqrt{5}}$$

$$\frac{-9\sqrt{3} - 12\sqrt{15}}{71}$$

$$5) \frac{5}{5\sqrt{3} - 2}$$

$$\frac{25\sqrt{3} + 10}{71}$$

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

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

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

$$\frac{-9\sqrt{3} - 6\sqrt{15} + 6 + 4\sqrt{5}}{11}$$

$$8) \frac{5\sqrt{5} - 3\sqrt{3}}{2\sqrt{2} + 5\sqrt{5}}$$

$$\frac{-10\sqrt{10} + 125 + 6\sqrt{6} - 15\sqrt{15}}{117}$$

$$9) \frac{5\sqrt{2} + 5}{5\sqrt{5} + 2\sqrt{3}}$$

$$\frac{25\sqrt{10} - 10\sqrt{6} + 25\sqrt{5} - 10\sqrt{3}}{113}$$

$$10) \frac{5 - 5\sqrt{2}}{4\sqrt{3} + 5}$$

$$\frac{20\sqrt{3} - 25 - 20\sqrt{6} + 25\sqrt{2}}{23}$$

$$11) \frac{3 - 2\sqrt{3}}{-5 + 3\sqrt{3}}$$

$$\frac{-3 - \sqrt{3}}{2}$$

$$12) \frac{3 - 3\sqrt{2}}{3\sqrt{5} + 5}$$

$$\frac{9\sqrt{5} - 15 - 9\sqrt{10} + 15\sqrt{2}}{20}$$

$$13) \frac{1}{2v + 2\sqrt{5v^3}}$$

$$\frac{-1 + \sqrt{5v}}{2v - 10v^2}$$

$$14) \frac{3n}{-4n^2 - 5\sqrt{3n^4}}$$

$$\frac{12 - 15\sqrt{3}}{59n}$$

$$15) \frac{2m}{-4 - 4\sqrt{3m^2}}$$

$$\frac{-m + m^2\sqrt{3}}{2 - 6m^2}$$

$$16) \frac{3m^2}{-5m^4 + 3\sqrt{5m}}$$

$$\frac{-15m^5 - 9m\sqrt{5m}}{25m^7 - 45}$$

$$17) \frac{k}{2 + 3\sqrt{2k^3}}$$

$$\frac{-2k + 3k^2\sqrt{2k}}{4 - 18k^3}$$

$$18) \frac{5\sqrt{5x^4}}{2x + 2\sqrt{5x^3}}$$

$$\frac{5x\sqrt{5} - 25x\sqrt{x}}{2 - 10x}$$

$$19) \frac{3\sqrt{2k^2} + 2\sqrt{3k^4}}{3k - 2\sqrt{k}}$$

$$\frac{9k\sqrt{2} + 6\sqrt{2k} + 6k^2\sqrt{3} + 4k\sqrt{3k}}{9k - 4}$$

$$20) \frac{-1 - 3\sqrt{2a^4}}{2\sqrt{5a^3} + 3\sqrt{2a^3}}$$

$$\frac{-2\sqrt{5a} + 3\sqrt{2a} - 6a^2\sqrt{10a} + 18a^2\sqrt{a}}{2a^2}$$

$$21) \frac{5x - 4\sqrt{3x}}{3 - 4\sqrt{x^4}}$$

$$\frac{5x - 4\sqrt{3x}}{3 - 4x^2}$$

$$22) \frac{3\sqrt{r^2} - 2\sqrt{5r^2}}{4 + 5\sqrt{3r^4}}$$

$$\frac{12r - 15r^3\sqrt{3} - 8r\sqrt{5} + 10r^3\sqrt{15}}{16 - 75r^4}$$

$$23) \frac{5 - 2\sqrt{3a^2}}{5a^2 - 3\sqrt{5a^2}}$$

$$\frac{25a + 15\sqrt{5} - 10a^2\sqrt{3} - 6a\sqrt{15}}{25a^3 - 45a}$$

$$24) \frac{-3 - 2\sqrt{2v^4}}{-1 + 4\sqrt{5v}}$$

$$\frac{3 + 12\sqrt{5v} + 2v^2\sqrt{2} + 8v^2\sqrt{10v}}{1 - 80v}$$