

## Rationalizing Denominators: Variables Present

**Simplify. Assume that all variables are positive.**

1)  $\frac{\sqrt{12x^2}}{\sqrt{30x}}$

2)  $\frac{\sqrt{81p^2}}{\sqrt{45p^2}}$

3)  $\frac{2}{\sqrt{6r^2}}$

4)  $\frac{5\sqrt{3xy^2}}{9\sqrt{8xy^4}}$

5)  $\frac{4\sqrt{a^3} + \sqrt{3a^4}}{\sqrt{37a^2}}$

6)  $\frac{10n^2 - \sqrt{n^2}}{\sqrt{15n^2}}$

7)  $\frac{\sqrt{2m^2n^2} - \sqrt{m^2n^3}}{\sqrt{39m^3n}}$

8)  $\frac{6\sqrt{2n^2} + 5n}{3\sqrt{6n^4}}$

9)  $\frac{-8 - 2\sqrt{2x^2}}{8x + \sqrt{6x^3}}$

10)  $\frac{2\sqrt{7p} - 9}{2 + \sqrt{5p^2}}$

11)  $\frac{\sqrt{5x} + \sqrt{7x^2}}{4 - 4\sqrt{x}}$

12)  $\frac{3 + 8\sqrt{5r}}{\sqrt{5r^4} + 6}$

13)  $\frac{3\sqrt{v^3} + 8}{6 - \sqrt{v}}$

14)  $\frac{-4b^2 + 4\sqrt{7b}}{\sqrt{10b^3} - 2}$

15)  $\frac{-4a + 7\sqrt{7a^2}}{-3 + 6\sqrt{5a}}$

16)  $\frac{\sqrt{7n^3} + 6\sqrt{6n^3}}{-8n - 4\sqrt{7n^3}}$

## Answers to Rationalizing Denominators: Variables Present

- 1)  $\frac{\sqrt{10x}}{5}$
- 2)  $\frac{3\sqrt{5}}{5}$
- 3)  $\frac{\sqrt{6}}{3r}$
- 4)  $\frac{5\sqrt{6}}{36y}$
- 5)  $\frac{4\sqrt{37a} + a\sqrt{111}}{37}$
- 6)  $\frac{10n\sqrt{15} - \sqrt{15}}{15}$
- 7)  $\frac{\sqrt{78mn} - n\sqrt{39m}}{39m}$
- 8)  $\frac{12\sqrt{3} + 5\sqrt{6}}{18n}$
- 9)  $\frac{-32 + 4\sqrt{6x} - 8x\sqrt{2} + 2x\sqrt{3x}}{32x - 3x^2}$
- 10)  $\frac{4\sqrt{7p} - 2p\sqrt{35p} - 18 + 9p\sqrt{5}}{4 - 5p^2}$
- 11)  $\frac{\sqrt{5x} + x\sqrt{5} + x\sqrt{7} + x\sqrt{7x}}{4 - 4x}$
- 12)  $\frac{3r^2\sqrt{5} - 18 + 40r^2\sqrt{r} - 48\sqrt{5r}}{5r^4 - 36}$
- 13)  $\frac{18v\sqrt{v} + 3v^2 + 48 + 8\sqrt{v}}{36 - v}$
- 14)  $\frac{-2b^3\sqrt{10b} - 4b^2 + 2b^2\sqrt{70} + 4\sqrt{7b}}{5b^3 - 2}$
- 15)  $\frac{4a + 8a\sqrt{5a} - 7a\sqrt{7} - 14a\sqrt{35a}}{3 - 60a}$
- 16)  $\frac{-2\sqrt{7n} + 7n - 12\sqrt{6n} + 6n\sqrt{42}}{16 - 28n}$