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) \( \frac{\sqrt{2m^2n^3} - \sqrt{m^2n^3}}{\sqrt{39m^3n}} \)
8) \( \frac{6\sqrt{2n^3} + 5n}{3\sqrt{6n^4}} \)

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) \( \frac{10m\sqrt{15} - \sqrt{15}}{15} \)

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) \( \frac{-2\sqrt{7n} + 7n - 12\sqrt{6n} + 6n\sqrt{42}}{16 - 28n} \)