

Review of Radicals

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1 Radical expressions

1. Evaluate each of the following expressions for the given value of the variables:

- (a) $\sqrt{3x - 2}$ when $x = 6$
- (b) $\sqrt{2x - 6}$ when $x = -7$
- (c) $\sqrt{x^2 - 4xy}$ when $x = -1$ and $y = 6$
- (d) $\sqrt{x^2 - y^2}$ when $x = -5$ and $y = -4$
- (e) $\sqrt{x^2 + x + 10}$ when $x = 6$
- (f) $\sqrt{5 - x^2}$ when $x = -5$
- (g) $\sqrt{-2xy}$ when $x = -4$ and $y = 50$

2. Simplify each of the following radical expressions:

- (a) $\sqrt{(-5)^2}$
- (b) $\sqrt{125}$
- (c) $\sqrt{72}$
- (d) $\sqrt{98}$
- (e) $\sqrt{600}$
- (f) $\sqrt{48}$
- (g) $\sqrt{-4}$
- (h) $\sqrt{-50}$
- (i) $\frac{2}{\sqrt{5}}$
- (j) $\frac{3}{\sqrt{3}}$
- (k) $\frac{\sqrt{3}}{\sqrt{5}}$
- (l) $\sqrt{\frac{1}{5}}$
- (m) $\sqrt{\frac{2}{3}}$
- (n) $\sqrt[3]{-8}$
- (o) $\sqrt[3]{56}$
- (p) $\sqrt[3]{\frac{9}{64}}$
- (q) $\frac{\sqrt{12}}{\sqrt{32}}$

3. Simplify each of the following radical expressions:

- (a) $5\sqrt{3} - 7\sqrt{2} + 3\sqrt{3}$

- (b) $\sqrt{7} + \sqrt{8}$
- (c) $7\sqrt{72} - 6\sqrt{98}$
- (d) $3\sqrt{8} - \sqrt{18} + 5\sqrt{52}$
- (e) $-4\sqrt{27} + \sqrt{75} - \sqrt{6}$
- (f) $2\sqrt{28} - 3\sqrt{63} - \sqrt{44} + 5\sqrt{99}$

4. Simplify each of the following radical expressions:

- (a) $\sqrt{3} \cdot \sqrt{6}$
- (b) $(5\sqrt{7})^2$
- (c) $(\sqrt{5})^3$
- (d) $(3\sqrt{2})^2$
- (e) $(1 - 2\sqrt{5})^2$
- (f) $\sqrt{3}(\sqrt{7} + \sqrt{5})$
- (g) $\sqrt{2}(\sqrt{10} + \sqrt{7})$
- (h) $(\sqrt{3} - \sqrt{5})(\sqrt{5} + \sqrt{21})$
- (i) $(\sqrt{7} - \sqrt{2})(\sqrt{7} + \sqrt{2})$
- (j) $(\sqrt{3} - \sqrt{2})^2$
- (k) $(\sqrt{5} + \sqrt{15})^2$
- (l) $(2 - \sqrt{5})(2 + \sqrt{5})$
- (m) $(1 + 3\sqrt{2})(1 - 3\sqrt{2})$
- (n) $(1 + \sqrt{2} + \sqrt{3})(2 + \sqrt{2} - \sqrt{6})$