

Topic 6: Simplify radicals

Simplify.

$$1. \sqrt[4]{32x^8y^9z^{19}} \quad 2. \sqrt[4]{8x^4yz^3}\sqrt[4]{2x^2y^3z^7} \quad 3. \sqrt{2}(\sqrt{18} + \sqrt{8})$$

$$4. \sqrt{\frac{45y^{12}z^{10}}{2x}} \quad 5. \sqrt[6]{\frac{r^4s^9}{2r^5}} \quad 6. \frac{2}{6+\sqrt{x}} \quad 7. \frac{4\sqrt{x}}{\sqrt{x}-y}$$

$$8. 3\sqrt{27c^2} - 2\sqrt{108c^2} - \sqrt{48c^2} \quad 9. \sqrt{4r^7s^5} + 3r^2\sqrt{r^3s^5} - 2rs\sqrt{r^5s^3}$$

$$10. 4\sqrt{x} + \frac{1}{\sqrt{x}} + \sqrt{\frac{1}{x}} \quad 11. (2\sqrt{5} - 3)^2$$

$$12. (2\sqrt{3x} - \sqrt{y})(3\sqrt{3x} + \sqrt{y}) \quad 13. 4\sqrt{3} - \frac{3}{\sqrt{3}} + 2\sqrt{18}$$

Answers

$$1. 2x^2y^2z^4\sqrt[4]{2yz^3} \quad 2. 2xyz^2\sqrt[4]{x^2z^2} \quad 3. 10$$

$$4. \frac{3y^6z^5\sqrt{10x}}{2x} \quad 5. \frac{s\sqrt[6]{32r^5s^3}}{2r} \quad 6. \frac{12-2\sqrt{x}}{36-x}$$

$$7. \frac{4x+4y\sqrt{x}}{x-y^2} \quad 8. -7c\sqrt{3} \quad 9. 3r^3s^2\sqrt{rs}$$

$$10. 2\sqrt{x}\left(2+\frac{1}{x}\right) \quad 11. 29-12\sqrt{5}$$

$$12. 18x - \sqrt{3xy} - y \quad 13. 3\sqrt{3} + 6\sqrt{2}$$