

Rationalize the denominator. Simplify if possible.

1. $\frac{10w^4x}{\sqrt{6wx^{10}y^{37}}}$

2. $\frac{18ce^{18}}{\sqrt[6]{9c^{40}d^7e^{23}}}$

3. $\frac{\sqrt{10} - 35}{\sqrt{20}}$

4. Simplify. $\sqrt{2} + 8\sqrt{3} - \sqrt[3]{3} + 11\sqrt{3} - 6\sqrt[3]{2} - 7\sqrt{2} + 13\sqrt[3]{2}$

Rationalize the denominator. Simplify if possible.

Answers

$$1. \frac{10w^4x}{\sqrt{6wx^{10}y^{37}}} \cdot \frac{\sqrt{6wy}}{\sqrt{6wy}} = \frac{10w^4x\sqrt{6wy}}{\sqrt{36w^2x^{10}y^{38}}} = \frac{10w^4x\sqrt{6wy}}{6w^1x^5y^{19}} = \boxed{\frac{5w^3\sqrt{6wy}}{3x^4y^{19}}}$$

$$2. \frac{18ce^{18}}{\sqrt{9c^{40}d^7e^{23}}} \cdot \frac{\sqrt[6]{3^4c^2d^5e}}{\sqrt[6]{3^4c^2d^5e}} = \frac{18ce^{18}\sqrt[6]{3^4c^2d^5e}}{\sqrt[6]{3^6c^{42}d^{12}e^{24}}} = \frac{18ce^{18}\sqrt[6]{3^4c^2d^5e}}{3c^7d^2e^4} = \boxed{\frac{6e^{14}\sqrt[6]{3^4c^2d^5e}}{c^6d^2}}$$

$$3. \frac{\sqrt{10}-35}{\sqrt{20}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{50}-35\sqrt{5}}{\sqrt{100}} = \frac{5\sqrt{2}-35\sqrt{5}}{10} = \boxed{\frac{\sqrt{2}-7\sqrt{5}}{2}}$$

4. Simplify. $\sqrt{2} + 8\sqrt{3} - \sqrt{3} + 11\sqrt{3} - 6\sqrt{2} - 7\sqrt{2} + 13\sqrt{2}$

$$\boxed{-6\sqrt{2} + 19\sqrt{3} - \sqrt{3} + 7\sqrt{2}}$$