

Simplify each. Use absolute value symbols where necessary.

1. $\sqrt[5]{-243a^{28}b^{14}}$

2. $\sqrt[4]{625x^{31}y^9}$

3. $\sqrt{108m^{12}n^{23}p^{37}}$

4. $\sqrt[7]{256g^{17}h^{41}k^5}$

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Answers

1. $\sqrt[5]{-243a^{28}b^{14}}$

2. $\sqrt[4]{625x^{31}y^9}$

$= \sqrt[5]{-243} \sqrt[5]{a^{28}} \sqrt[5]{b^{14}}$

$= \sqrt[4]{625} \sqrt[4]{x^{31}} \sqrt[4]{y^9}$

$= -3 a^5 b^2 \sqrt[5]{a^3 b^4}$

$= 5 |x^7| y^2 \sqrt[4]{x^3 y}$

3. $\sqrt{108m^{12}n^{23}p^{37}}$

4. $\sqrt[7]{256g^{17}h^{41}k^5}$

$2^7 = 128$

$= \sqrt{108}$

$= \sqrt[7]{256}$

$= \sqrt{36 \cdot 3} \sqrt{m^{12}} \sqrt{n^{23}} \sqrt{p^{37}}$

$= \sqrt[7]{128 \cdot 2} \sqrt[7]{g^{17}} \sqrt[7]{h^{41}} \sqrt[7]{k^5}$

$= 6 m^6 |n^{11}| p^{18} \sqrt{3np}$

$= 2g^2 h^5 \sqrt[7]{2g^3 h^6 k^5}$