

Raising a Product to a Power

* Raise each factor to that power

$$(\underline{x^2} \underline{y^3})^4 = x^{2 \cdot 4} y^{3 \cdot 4} = x^8 y^{12}$$

$$(\underline{2^1} \underline{x^3})^5 = 2^{1 \cdot 5} x^{3 \cdot 5} = 2^5 x^{15}$$

$$(\underline{y^3} \underline{x^2} \underline{z^3})^7 = y^{3 \cdot 7} x^{2 \cdot 7} z^{3 \cdot 7} = y^{21} x^{14} z^{21}$$

$$\checkmark \textcircled{1} (\underline{x^2} \underline{y^4})^4 = x^{2 \cdot 4} y^{4 \cdot 4} = \textcircled{x^8 y^{16}}$$

$$\checkmark \textcircled{2} (\underline{4^3} \underline{x^2})^3 = 4^{3 \cdot 3} x^{2 \cdot 3} = \textcircled{4^9 x^6}$$

$$\checkmark \textcircled{3} (\underline{z^4} \underline{p^5} \underline{y^2})^6 = z^{4 \cdot 6} p^{5 \cdot 6} y^{2 \cdot 6} = z^{24} p^{30} y^{12}$$

$$\checkmark \textcircled{4} (\underline{6^1} \underline{z^2} \underline{y^4} \underline{p^1})^3 = \underline{6^{1 \cdot 3}} \underline{z^{2 \cdot 3}} \underline{y^{4 \cdot 3}} \underline{p^{1 \cdot 3}} = \textcircled{6^3 z^6 y^{12} p^3}$$

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