Questions: Laws of indices

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Summary

A selection of questions for the study guide on laws of indices.

Before attempting these questions, it is highly recommended that you read Guide: Laws of indices.

Q1

Express each of the following as a single real number.

1.1. 3^4

1.2. $125^{\frac{2}{3}}$

1.3. $32^{\frac{2}{5}}$

1.4. $729^{-\frac{2}{3}}$

1.5. $4^3 \cdot 2^5$

1.6. $2^2 \cdot 3^2$

1.7. $8^5 \cdot 6^5$

1.8. $12^6 \cdot 3^6$

1.9. $\dfrac{9^2}{27^2}$

1.10. $(5^2)^2$

1.11. $(35^0)^9$

1.12. $(35^9)^0$

1.13. $(729^9)^{\frac{1}{9}}$

1.14. 7^{-3}

1.15. $\dfrac{4^5}{2^5}$

1.16. $\dfrac{2^{-2}}{13^{-2}}$

1.17. $64^{\frac{4}{3}}$

1.18. $\left(\dfrac{4^3 \cdot 3^3}{6^3}\right)$

1.19. $\left(\dfrac{4^2 \cdot 8^2}{2^2}\right) \cdot \left(\dfrac{1}{2}\right)^2$

1.20. $\dfrac{\left[\left(\frac{-2}{3}\right)^{-3} \cdot \left(\frac{-3}{5}\right)^{-3}\right]}{\left(\frac{2}{3}\right)^{-3}}$

1.21. $\dfrac{\left(\frac{1}{2}\right)^4 \left(\frac{3}{5}\right)^4}{\left(\frac{8}{3}\right)^4}$

1.22. $\left(\dfrac{2}{3}\right)^{14} \cdot \left(\dfrac{9}{12}\right)^{14}$

Q2

Evaluate the following expressions, writing your answer in the simplest possible form.

2.1. $(b^7)^4$

2.2. $y^{13} \cdot y^5$

2.3. $a^2 \cdot b^2$

2.4. $\dfrac{x^{13}}{x^5}$

2.5. $(y^{-2})^5$

2.6. $a^{-4} \cdot b^{-4}$

2.7. $(7z^{-5})^3$

2.8. $\dfrac{8x^5}{4x^{-5}}$

2.9. $(x^2)^3 \cdot x^5$

2.10. $\dfrac{2a^{-4}}{3a^{-2}}$

2.11. $\dfrac{x^5}{y^5}$

2.12. $\dfrac{2y^3}{2y^5}$

2.13. $\left(\dfrac{2}{a}\right)^4 \cdot \left(\dfrac{a}{12}\right)^3$

2.14. $\dfrac{25t^{-4}}{60t^5}$

2.15. $\left(\frac{a}{b}\right)^{-4} \cdot \left(\frac{c}{d}\right)^{4} \cdot \left(\frac{e}{f}\right)^{4}$

2.16. $\frac{5^{x+1} \cdot 6^{x+1}}{3^{x+1}}$

2.17. $\left(a^{\frac{1}{2}}\right) \cdot \left(b^{-\frac{1}{2}}\right)$

2.18. $\left(\frac{a}{b}\right)^{n} \cdot \left(\frac{c}{d}\right)^{-n}$

After attempting the questions above, please click this link to find the answers..
