Indices

LEAMY
MATHS COMMUNITY

1. Find the value of n in each of the following:

   (a) $3^4 \times 3^3 = 3^n$

   (b) $6^4 \times 6^{-2} = 6^n$

   (c) $(5^3)^6 = 5^n$

   (d) $(6^4)^{-3} = 6^n$

   (e) $\dfrac{1}{2^5} = 2^n$

   (f) $\sqrt{2} = 2^n$

   (g) $(\sqrt{3})^3 = 3^n$

   (h) $\dfrac{2^3}{\sqrt{2}} = 2^n$

   (i) $\dfrac{1}{\sqrt{3}} = 3^n$

   (j) $(\sqrt{2})^3 \times 2^5 = 2^n$

   Solve the following exponential equations.

2. $5^{2x-1} = 5^5$

3. $2^x = 8$

4. $2^{2x-1} = 16$

5. $4^x = 32$

6. $27^{2x-3} = 81$

7. $2^x = \dfrac{1}{8}$

8. $3^{x+1} = \dfrac{1}{81}$

9. $9^{x-2} = \dfrac{1}{27}$

10. $2^x = \sqrt{2}$

11. $5^{x+1} = \sqrt{5}$

12. $9^x = \sqrt{3}$

13. $7^x = \dfrac{1}{\sqrt{7}}$

14. $9^x = \dfrac{1}{27}$

15. $9^x = \dfrac{1}{\sqrt{27}}$

16. $8^{x-1} = \dfrac{\sqrt{32}}{16}$

17. $\sqrt{2}(2^{2x}) = \left(\dfrac{32}{\sqrt{8}}\right)^2$

18. $81(3^{x^2}) = 243^x$

19. $\dfrac{(81^x)^x}{27^x} = 3$

20. $2^{x+y} = 8$
    $3^{4x-y} = 9$

21. $2^{3x} = 8^{y-1}$
    $81^x = 9^{y+1}$

22. $3^x \times 3^y = \dfrac{1}{3}$
    $2^x \times 4^y = 1$

23. $\dfrac{3^x}{9^y} = 243$
    $3^x \times 27^y = 1$

24. Solve the following equations for x:

    (a) $3^{2x} - 10(3^x) + 9 = 0$

    (b) $5^{2x} - 126(5^x) + 125 = 0$

    (c) $2^{2x} - 17(2^x) + 16 = 0$

    (d) $2^{2x+1} - 17(2^x) + 8 = 0$

    (e) $3^{2x+2} - 28(3^x) + 3 = 0$

    (f) $5^{2x+1} - 26.5^x + 5 = 0$

    (g) $2^{2x+3} - 33(2^x) + 4 = 0$

25. Solve the following equations for x:

    (a) $2^x + 2^{2-x} = 5$

    (b) $3^{x+1} + 3^{2-x} = 28$

    (c) $5^x + 5^{2-x} = 26$

    (d) $2^{x+1} + 2^{1-x} - 5 = 0$

    (e) $3^{x+2} + 3^{-x} - 10 = 0$

    (f) $2^{x-1} + 2^{-x} = \frac{9}{4}$