

UB SAT 2009
Worksheet #6
Exponents and Roots

Solve for x . Please leave answers as fractions.

1. $2^x = 4$

2. $3^x = 81$

3. $6^x = 216$

4. $2^{x-3} = 4$

5. $3^{2x} = 81$

6. $4^{2x-1} = 16$

7. $2^{4x-3} = 2^{2x+1}$

8. $5^{x-1} = 5^{2x+1}$

9. $8^x = 8^{2x-3}$

10. $5^{2x} = 5^{3x-1}$

11. $2^x \cdot 2^{-1} = 2^2$

12. $4^3 \cdot 4^2 = 4^x$

13. $5^x \cdot 5^2 = 5^3 \cdot 125$

14. $7^{x-1} = 49^{3x}$

15. $2^{5x} = 4^{2x-3}$

16. $6^{3x-1} = 216^{2x+1}$

17. $2^x = 1$

18. $4^{-x} = \frac{1}{4}$

19. $4^{x-3} = 8^{x-4}$

20. $16^{2x-1} = 64^x$

21. $27^{2x} = 81^{x-1/2}$

22. $\left(\frac{2}{3}\right)^{x-2} = \left(\frac{8}{27}\right)^x$

23. $\left(\frac{2}{3}\right)^{x-2} = \left(\frac{27}{8}\right)^x$

24. $\left(\frac{1}{36}\right)^x = 216^{x+5}$

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Answers

1. 2

2. 4

3. 3

4. 5

5. 2

6. $\frac{3}{2}$

7. 2

8. -2

9. 3

10. 1

11. 3

12. 5

13. 4

14. $-\frac{1}{5}$

15. -6

16. $-\frac{4}{3}$

17. 0

18. 1

19. 6

20. 2

21. -1

22. -1

23. $\frac{1}{2}$

24. -3