

Simplify:

1. $x^5 \cdot x^8 =$ _____	2. $x^3 \cdot x^{-6} =$ _____	3. $\frac{16x^3}{2x^2} =$ _____
4. $(3x^6)^3 =$ _____	5. $(-2x^4)^3 =$ _____	6. $\sqrt{16} =$ _____
7. $\sqrt[3]{16} =$ _____ (no calculator!!)	8. $\sqrt{48} =$ _____ (no calculator!!)	9. $\sqrt{x^4} =$ _____ (no calculator!!)
10. $(x^3)^{\frac{1}{6}} =$ _____ = $\sqrt{\quad}$	11. $(x)^{\frac{4}{3}} =$ $\sqrt{\quad}$	12. $(x)^{\frac{6}{5}} =$ $\sqrt{\quad}$
13. $\left(\frac{x^5 y^3}{x^{-7} y^{-6}}\right) =$ _____	14. $\left(\frac{x^5 y^3}{x^{-7} y^{-6}}\right)^{\frac{1}{3}} =$ _____	15. $\left(\frac{x^5 y^3}{x^{-7} y^{-6}}\right)^0 =$ _____

Solve:

16. $x^4 \cdot x^a = x^{10}$ $a =$ _____	17. $(2^6)^a = 2^{18}$ $a =$ _____
18. $x^0 =$ _____	19. $2^5 \cdot 2^a = 2^1$ $a =$ _____
20. $2^5 \cdot 2^a = 1$ $a =$ _____	21. $x^a = 0$ $a =$ _____

Simplify:

$$22. \sqrt{3} + 3\sqrt{3} = \underline{\hspace{2cm}}$$

$$23. 5\sqrt{2} + 8\sqrt{2} = \underline{\hspace{2cm}}$$

$$24. 4\sqrt{5} - 3\sqrt{2} + \sqrt{2} = \underline{\hspace{2cm}}$$

$$25. 4\sqrt{2} \cdot 3\sqrt{8} = \underline{\hspace{2cm}}$$

$$26. -8\sqrt{3} \cdot 2\sqrt{9} = \underline{\hspace{2cm}}$$

$$27. \sqrt{50} + \sqrt{8} = \underline{\hspace{2cm}}$$