

Math 105 - Homework 9**Name:** _____*Simplify the following without using a calculator.*

1. $5^0 \cdot 4^2$

2. $(-3c)^2$

3. $\left(\frac{4xy}{8x^2}\right)^3$ Hint: *cancel common factors first.*

4. $x^2 + x^2 + x^2$

5. $(a^3 + a^3)^2$

6. $\sqrt{z^2 + z^2 + z^2 + z^2}$

7. $\sqrt{4x^6}$

8. $\sqrt[3]{5\sqrt{5}}$

9. $(4)^{3/2}$

10. $\sqrt{3^2 + 4^2}$

11. $(3x^2y)(-4x^5y^3)$

12. $\sqrt{25xy^4}$

13. $\sqrt{18x} \cdot \sqrt{2x^3}$

14. $\sqrt{\frac{27x^4}{y^2 + y^2 + y^2}}$

15. $\sqrt{\frac{15}{8} \cdot \frac{10}{3}}$ Hint: *cancel common factors first.*

16. $2^{-1} + 3^{-1}$

17. $\left(\frac{3x}{y^3}\right)^{-2}$

18. $\sqrt{\frac{16}{x^{-4}}}$

19. $(2^3 \cdot 3^0 \cdot 5^{-1})^2$

20. $8^{-1/3}$

21. $\left(\frac{4x}{25}\right)^{-1/2}$

22. $(4x^3y)(-5x^2y^4)^2$

23. $\frac{50x^5y^3}{(5xy^4)^2}$

24. $\sqrt{25x^{-2}}$

25. $\sqrt[3]{\frac{3p}{q}} \cdot \sqrt[3]{9p^5q}$

26. $8^{1/5} 2^{2/5}$

27. $\sqrt{45}$ Hint: *what are the factors of 45?*

28. $\frac{20x^{-2}y^3}{5x^{-5}y^{-1}}$

29. $\frac{(\frac{1}{x})y^{-3}z^4}{x^{-2}y(\frac{1}{z^2})}$

30. $(x+y)^{-2}(x+y)^3y^{-1}$

Evaluate. Remember: Powers don't distribute to terms! Try FOIL-ing instead.

31. $(\sqrt{5} + \sqrt{20})^2$

32. $(\sqrt{50} - \sqrt{2})^2$

Evaluate by converting the decimal to a fraction first.

33. $\sqrt{0.16}$

34. $\sqrt[3]{-0.008}$

Find the power of each factor in the expressions below. Then rewrite the expressions using those powers.

35. $a \cdot a \cdot a \cdot \sqrt{b} \cdot c \cdot c$

36. $\frac{a \cdot a \cdot a \cdot a \cdot b \cdot b}{c \cdot d \cdot d}$