

**Advanced Algebra**  
**Unit 4 Test Review**

Name \_\_\_\_\_  
Hour \_\_\_\_\_

*Rewrite in radical or rational exponent form. Then evaluate on the calculator. Round to thousandths.*

1.  $-3^{3/2}$

2.  $(\sqrt{5})^7$

3.  $\sqrt[4]{2^7}$

*Evaluate WITHOUT a calculator. You MUST show work!*

4.  $-27^{4/3}$

5.  $\sqrt[3]{-64}$

6.  $(-27)^{2/3}$

7.  $\sqrt{4^3}$

8.  $81^{1/4}$

9.  $64^{-4/3}$

*Simplify using properties of exponents.*

10.  $(3.48 \times 10^{-7})(9.8 \times 10^4)$

11.  $\frac{1.6328 \times 10^{-6}}{5.2 \times 10^6}$

12.  $(2.0 \times 10^4)^{-5}$

13.  $(4a^2b^{-3}c)^2 \cdot (a^{-5}b^6c^3)$

14.  $\left(\frac{2h^3j^{-3}k^4}{6hj^0k^7}\right)^{-3}$

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

Simplify using properties of radicals.

16.  $\sqrt{2} \sqrt{18}$

17.  $\frac{\sqrt[3]{4}}{\sqrt[3]{32}}$

18.  $\frac{6\sqrt[3]{5}}{\sqrt[3]{16}}$

19.  $\sqrt[3]{108} \sqrt[3]{32}$

20.  $3\sqrt{45} + 2\sqrt{80}$

21.  $6\sqrt[4]{80} - \sqrt[4]{405}$

Simplify the expression. Write final answers in RATIONAL exponent form if necessary.

22.  $\frac{3^{2/3}}{3^{-1/3}}$

23.  $(2x^4y^{1/2})^2$

24.  $y^2 \cdot \sqrt[4]{y^3}$

25.  $\sqrt[3]{\frac{81x^5y^2z}{3x^2y^{-4}z}}$

26.  $(x^{-3/2})^{2/5}$

27.  $\sqrt{x^3y^4z} \cdot \sqrt{xy^2z^{-3}}$

Solve using the quadratic formula. Simplify your radicals and include imaginary solutions.

28.  $x^2 + 3x = -5$

29.  $2x^2 + 8x + 11 = 0$

Solve. No decimals – simplify radicals if necessary. You may have 1 or 2 solutions. Check for extraneous!

30.  $(x-3)^6 = 128$

31.  $4x^5 + 96 = 24$

32.  $-4(x+4)^5 = 108$

33.  $\frac{3}{2}(x-1)^{2/3} + 2 = 8$

34.  $4 = \sqrt[3]{2x-8}$

35.  $2\sqrt{3x+4} - 4 = 10$

36.  $3\sqrt[4]{2x-1} = -9$

37.  $\sqrt{3x+7} = x+1$

**Unit 4 Review ANSWERS** -----

1.  $-(\sqrt{3})^3 \approx -5.196$

2.  $5^{\frac{7}{2}} \approx 279.508$

3.  $2^{\frac{7}{4}} \approx 3.364$

4. -81

5. -4

6. 9

7. 8

8. 3

9.  $\frac{1}{256}$

10.  $3.4104 \times 10^{-2}$

11.  $3.14 \times 10^{-13}$

12.  $3.125 \times 10^{-22}$

13.  $\frac{16c^5}{a}$

14.  $\frac{27j^9k^9}{h^6}$

15.  $\frac{8x^8z}{y^4}$

16. 6

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

18.  $\frac{3\sqrt[3]{20}}{2}$

19.  $12\sqrt[3]{2}$

20.  $17\sqrt{5}$

21.  $9\sqrt[4]{5}$

22. 3

23.  $4x^8y$

24.  $y^{\frac{11}{4}}$

25.  $3xy^2$

26.  $\frac{1}{x^{\frac{3}{5}}}$

27.  $\frac{x^2y^3}{z}$

28.  $\frac{-3 \pm i\sqrt{11}}{2}$

29.  $-1 \pm \frac{i\sqrt{6}}{4}$

30.  $3 \pm 2\sqrt[6]{2}$

31.  $-\sqrt[5]{18}$

32.  $-4 - \sqrt[5]{27}$

33. 9, -7

34. 36

35. 15

36.  $\emptyset$  (41 is extraneous)

37. 3 (-2 is extraneous)