**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block \_\_\_\_\_\_**

|  |  |
| --- | --- |
| **Square Root** | For any real numbers *a* and *b*, if *a*2 = *b*, then *a* is a square root of *b*. |
| ***n*th root** | For any real numbers *a* and *b*, and any positive integer *n*, if *an* = *b*, then *a* is an *n* th root of *b*. |
| **Real *n* th Roots of *b*,** | 1. If *n* is even and *b* > 0, then *b* has one positive real root and one real negative root.  2. If *n* is odd and *b* > 0, then *b* has one positive real root.  3. If *n* is even and *b* < 0, then *b* has no real roots.  4. If *n* is odd and *b* < 0, then *b* has one negative real root. |

|  |  |
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| ***Example 1* Simplify .**    *z*4 must be positive, so there is no need to take the absolute value. | ***Example 2* Simplify .** |

*Exercises: Simplify.*

|  |  |  |
| --- | --- | --- |
| **1.** | **2.** | **3.** |
| **4.** | **5.** | **6.** |
| **7.** | **8.** | **9.** |
| **10.** | **11.** | **12.** |
| **13.** | **14.** | **15.** |

|  |  |  |
| --- | --- | --- |
| **16.** | **17.** | **18.** |
| **19.** | **20.** | **21.** |
| **22.** | **23.** | **24.** |
| **25.** | **26.** | **27.** |
| **28.** | **29.** | **30.** |

### *Rationalizing the Denominator*

|  |  |
| --- | --- |
| **31.** | **32.** |
| **33.** | **34.** |