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|  | ***Exponent Law*** | ***Example*** |
| #1 | ***Multiplication Law:***  **am x an = am+n** | a3 x a4 = a3+4 = a7  (x2)(x7) = x2+7 = x9  32 x 33 = 32+3  = 35 = 243 |
| #2 | ***Division Law:***  **am/an = am-n**  **or**  **am÷an = am-n**(a≠0) | a9/a5 = a9-5 = a4  d5/d3 = ~~d~~•~~d~~•~~d~~•d•d = d•d = d2  ~~d~~•~~d~~•~~d~~ 1  75÷73 = 75-3 = 72 = 49 |
| #3 | ***Power Rules***  **(am)n = amn** | (a2)3 = a2x3 = a6  (23)3 = 23x3 = 29 = 512 |
| #4 | **(ab)m = ambm** | (2•3)2  = 22 • 32 = 4 • 9 = 36 |
| #5 | **(a/b)m = am/bm** (b≠0) | (3/4)2 = 32/42 = 9/16 |
| #6 | ***Negative Exponents***  **a-m = 1/am** (a≠0) | 52/54 = 52-4 = 5-2  *or*  52/54 = \_~~5~~•~~5~~\_\_ = \_1\_ = \_1\_  ~~5~~•~~5~~•5•5 5•5 52  *Therefore...* 5-2 = \_1\_  52 |
| #7 | **(a/b)-m = a-m/b-m**  **= bm/am** (a≠0) | *Think...* (a/b)-m = 1/(a/b)m (from #6)  = 1/(am/bm) (from #5)  = 1 ÷ (am/bm)  **invert and multiply**  = 1 x (bm/am)    = bm/am |

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|  | ***Exponent Law*** | ***Example*** |
| #8 | ***Exponent of Zero***  **a0 = 1** | *We know...* 25 ÷ 25 = 1  *but,* 25=52  so, 52 ÷ 52  = 1  *which means,* 52-2 = 1 (from #2)  *but,* 2-2=0 *so,* 50 = 1 |
| #9 | ***Product Rule for Square Roots:***  **= x** | = x  or = x  or = x |
| #10 | ***Product Rule for Cube Roots:***  **x** | x  = 2 *because* = 2 |
| #11 | ***Rational Exponents***  *=* | *=* = 2  *=* = 5 |
| #12 | ***Rational Exponents***  *=* *=* ()m | *= =* ()2 = (3)2 = 9 |