

**Potencias**

| Propiedad                   | Ejemplo                  | Propiedad                                      | Ejemplo                  |
|-----------------------------|--------------------------|--|--------------------------|
| $x^n \cdot x^m = x^{n+m}$   | $5^4 \cdot 5^3 = 5^7$    | $x^n \cdot y^n = (x y)^n$                      | $5^3 \cdot 4^3 = 20^3$   |
| $\frac{x^n}{x^m} = x^{n-m}$ | $\frac{5^7}{5^3} = 5^4$  | $\frac{x^n}{y^n} = \left(\frac{x}{y}\right)^n$ | $\frac{20^3}{4^3} = 5^3$ |
| $(x^n)^m = x^{n \cdot m}$   | $(5^3)^4 = 5^{12}$       | $x^0 = 1$                                      | $5^0 = 1$                |
| $\frac{1}{x^n} = x^{-n}$    | $\frac{1}{5^3} = 5^{-3}$ | $x^1 = x$                                      | $5^1 = 5$                |

**Radicales**

| Propiedad                                     | Ejemplo   | Propiedad   | Ejemplo  |
|---|---|---|--|
| $\sqrt[n]{x} = x^{1/n}$                       | $\sqrt[3]{5} = 5^{1/3}$                                       | $\sqrt[n]{x} \cdot \sqrt[n]{y} = \sqrt[n]{x y}$           | $\sqrt[3]{5} \cdot \sqrt[3]{4} = \sqrt[3]{20}$   |
| $\sqrt[n]{x^m} = x^{m/n}$                     | $\sqrt[3]{5^4} = 5^{4/3}$                                     | $\frac{\sqrt[n]{x}}{\sqrt[n]{y}} = \sqrt[n]{\frac{x}{y}}$ | $\frac{\sqrt[3]{20}}{\sqrt[3]{4}} = \sqrt[3]{5}$ |
| $\sqrt[n]{\sqrt[m]{x}} = \sqrt[n \cdot m]{x}$ | $\sqrt[3]{\sqrt[4]{5}} = \sqrt[12]{5}$                        | $(\sqrt[n]{x})^m = \sqrt[n]{x^m}$                         | $(\sqrt[3]{5})^2 = \sqrt[3]{5^2} = \sqrt[3]{25}$ |
| $x \cdot \sqrt[n]{y} = \sqrt[n]{x^n y}$       | $5 \cdot \sqrt[3]{2} = \sqrt[3]{5^3 \cdot 2} = \sqrt[3]{250}$ | $(\sqrt[n]{x})^n = x$                                     | $(\sqrt[3]{5})^3 = 5$                            |

**Logaritmos**

| Propiedad  | Ejemplo                                 | Propiedad                              | Ejemplo                                      |
|--|---|--|--|
| $\log x + \log y = \log(x y)$                    | $\log 5 + \log 4 = \log 20$             | $\log_a(a^n) = n$                      | $\log_5(5^3) = 3$                            |
| $\log x - \log y = \log\left(\frac{x}{y}\right)$ | $\log 20 - \log 4 = \log 5$             | $\log_a x = \frac{\log_b x}{\log_b a}$ | $\log_2 8 = \frac{\log_{10} 8}{\log_{10} 2}$ |
| $\log(x^n) = n \log x$                           | $\log(2^3) = 3 \log 2$                  | $\log_a a = 1$                         | $\log_5 5 = 1$                               |
| $\log \sqrt[n]{x} = \frac{1}{n} \log x$          | $\log \sqrt[3]{5} = \frac{1}{3} \log 5$ | $\log 1 = 0$                           |  |