

① $100^{1/2} = 10$

② $100^{-1/2} = \frac{1}{10}$

③ $\sqrt[4]{81} = 3$

④ $\sqrt[3]{-8} = -2$

⑤ $(\sqrt{10})^4 = 10^2$

⑥ $81^{3/4} = 27$

⑦ $\sqrt[3]{5} \cdot \sqrt[3]{5} \cdot \sqrt[3]{5} \cdot \sqrt[3]{5} = 5 \cdot \sqrt[3]{5}$

⑧ $\log_{10} 0 = \text{not possible}$

⑩ $5^{3x-2} = 125$

$3x-2=3$
 $3x=5$
 $x=5/3$

⑪ $7^x \cdot 7^{x+5} = 49$

$2x+5=2$
 $2x=-3$
 $x=-3/2$

⑫ $4^{-2x} \cdot 4^{-4x} = \frac{1}{64}$

$4^{-6x} = 4^{-3}$
 $-6x = -3$
 $x = 1/2$

⑬ $\log_x 3 = \frac{1}{4}$

$x^{1/4} = 3$
 $x = 81$

⑭ $x = \log_2 32 = 5$

⑨ $\log_{27} 3 = 1/3$

⑩ $\log_2 16 - \log_3 27 = 4 - 3 = 1$

⑪ $\log_{25} 5 + \frac{1}{2} \cdot \log_5 25 = \frac{1}{2} + \frac{1}{2}(2) = 1.5$

⑫ $\log_2 64 = 6$

⑬ $\log_7 1 = 0$

⑭ $\left(\frac{-27}{64}\right)^{2/3} = \left(\frac{(-3)^3}{4^3}\right)^{2/3} = \frac{(-3)^2}{4^2} = \frac{9}{16}$

⑮ $\left(\frac{-27}{64}\right)^{-2/3} = \left(\frac{4^3}{(-3)^3}\right)^{2/3} = \frac{16}{9}$

⑯ $\frac{1}{3} \cdot \log_3 27 + \log_2 \sqrt[4]{2}$

$1 + 2^{1/4} = 2^{1/4}$
 $1 + \frac{1}{6} = \frac{7}{6}$

⑰ $-16^{3/4} = -(2^4)^{3/4} = -(2)^3 = -8$

⑱ $(\sqrt[3]{10})^2 = 10^{2/3}$

⑲ $\left(\frac{1}{81}\right)^x = 3^{9x-2}$
 $3^{-4} = 3^{9x-2}$
 Don't do in 2016. Made wrap.

$-4 = 9x-2$
 $-13x = -2$
 $x = 2/13$

⑳ $8^{x+6} = 16^{x-2}$

$3(x+6) = 4(x-2)$
 $3x+18 = 4x-8$
 $26 = -x$
 $x = -26$

