Write in log form:

(1.) $2^3 = 8$ here is the problem

   $\log_2 8 = 3$ write in log form

(2.) $3^2 = 9$ here is the problem

   $\log_3 9 = 2$ write in log form

(3.) $6^3 = 216$ here is the problem

   $\log_6 216 = 3$ write in log form

(4.) $4^4 = 256$ here is the problem

   $\log_4 256 = 4$ write in log form

(5.) $11^3 = 1331$ here is the problem

   $\log_{11} 1331 = 3$ write in log form

(6.) $10^{-2} = 1/100$ here is the problem

   $\log_{10} 1/100 = -2$ write in log form

(7.) $10^{-3} = 1/1000$ here is the problem

   $\log_{10} 1/1000 = -3$ write in log form

(8.) $4^{0.5} = 2$ here is the problem

   $\log_4 2 = 0.5$ write in log form

Write in exponential form:

(9.) $\log_2 16 = 4$ here is the problem

   $2^4 = 16$ write in exponential form

(10.) $\log_3 27 = 3$ here is the problem

   $3^3 = 27$ write in exponential form

(11.) $\log_8 64 = 2$ here is the problem

    $8^2 = 64$ write in exponential form

(12.) $\log_7 343 = 3$ here is the problem

    $7^3 = 343$ write in exponential form

(13.) $\log_{0.5} 0.25 = 2$ here is the problem

    $0.5^2 = 0.25$ write in exponential form

(14.) $\log_{10} 0.001 = -3$ here is the problem

    $10^{-3} = 0.001$ write in exponential form

(15.) $\log_2 (1/8) = -3$ here is the problem

    $2^{-3} = 1/8$ write in exponential form

Evaluate:

(19.) $\log_{10} 10,000$ here is the problem

    $\log_{10} 10,000 = x$ set the problem equal to x

    $10^x = 10,000$ write in exponential form

    $x = 4$

(20.) $\log_{10} 10$ here is the problem

    $\log_{10} 10 = x$ set the problem equal to x

    $10^x = 10$ write in exponential form

    $x = 1$

(21.) $\log_2 8$ here is the problem

    $\log_2 8 = x$ set the problem equal to x

    $2^x = 8$ write in exponetial form

x = 3

(22.) $\log_2 64$ here is the problem

   $\log_2 64 = x$ set the problem equal to x

   $2^x = 64$ write in exponential form

   x = 6

(23.) $\log_2 32$ here is the problem

   $\log_2 32 = x$ set the problem equal to x

   $2^x = 32$ write in exponential form

   x = 5

(24.) $\log_2 16$ here is the problem

   $\log_2 16 = x$ set the problem equal to x

   $2^x = 16$ write in exponential form

   x = 4

(25.) $\log_3 1$ here is the problem

   $\log_3 1 = x$ set the problem equal to x

   $3^x = 1$ write in exponential form

   x = 0

(26.) $\log_3 1/9$ here is the problem

   $\log_3 1/9 = x$ set the problem equal to x

   $3^x = 1/9$ write in exponential form

   x = -2

(27.) $\log_{10} 0.01$ here is the problem

$\log_{10} 0.01 = x$ set the problem equal to x

$10^x = 0.01$ write in exponential form

$x = -2$

(28.) $\log_{10} 0.0001$ here is the problem

$\log_{10} 0.0001 = x$ set the problem equal to x

$10^x = 0.0001$ write in exponential form

$x = -4$

(29.) $\log_4 64$ here is the problem

$\log_4 64 = x$ set the problem equal to x

$4^x = 64$ write in exponential form

$x = 3$

(30.) $\log_6 36$ here is the problem

$\log_6 36 = x$ set the problem equal to x

$6^x = 36$ write in exponential form

$x = 2$

(31.) $\log_{10} 1$ here is the problem

$\log_{10} 1 = x$ set the problem equal to x

$10^x = 1$ write in exponential form

$x = 0$

(32.) $\log_{10} \sqrt{10}$ here is the problem

$\log_{10} \sqrt{10} = x$ set the problem equal to x

$10^x = \sqrt{10}$ write in exponential form

x = 1/2

(33.) $\log_2 1/4$ here is the problem

      $\log_2 1/4 = x$ set the problem equal to x

    $2^x = 1/4$ write in exponential form

    x = -2

(34.) $\log_3 \ 1/27$ here is the problem

   $\log_3 1/27 = x$ set the problem equal to x

    $3^x = 1/27$ write in exponential form

    x = -3

(35.) $\log_{1/2} 8$ here is the problem

    $\log_{1/2} 8 = x$ set the problem equal to x

    $(1/2)^x = 8$ write in exponential form

    x = -3

(36.) $\log_{1/2} 16$ here is the problem

    $\log_{1/2} 16 = x$ set the problem equal to x

    $(1/2)^x = 16$ write in exponential form

    x = -4

(37.) $\log_{1/3} 27$ here is the problem

    $\log_{1/3} 27 = x$ set the problem equal to x

    $(1/3)^x = 27$ write in exponential form

    x = -3

(38.) $\log_{1/3} 81$ here is the problem

       $\log_{1/3} 81 = x$ set the problem equal to x

       $(1/3)^x = 81$ write in exponential form

       $x = -4$

Solve for the variable:

(39.) $\log_a 64 = 3$ here is the problem

       $a^3 = 64$ write in exponential form

       $a = 4$

(40.) $\log_a 32 = 5$ here is the problem

       $a^5 = 32$ write in exponential form

       $a = 2$

(41.) $\log_a 2 = 1/2$ here is the problem

       $a^{1/2} = 2$ write in exponential form

       $a = 4$ square each side

(42.) $\log_a 8 = 3/2$ here is the problem

       $a^{3/2} = 8$ write in exponential form

       $a^{(1/2)} = 2$ take the cube root of each side

            $a = 4$ square each side

(43.) $\log_3 x = 4$ here is the problem

        $3^4 = x$ write in exponential form

        $x = 81$

(44.) $\log_2 x = 7$ here is the problem

$2^7 = x$ write in exponential form

   $x = 128$

(45.) $\log_{10} x = -3$ here is the problem

   $10^{-3} = x$ write in exponential form

   $x = 1/1000$

(46.) $\log_{10} 1 = y$ here is the problem

   $10^y = 1$ write in exponential form

   $y = 0$

(47.) $\log_4 8 = y$ here is the problem

        $4^y = 8$ write in exponential form

    $(2^2)^y = 2^3$ write as powers of 2

     $2^{2y} = 2^3$ multiply exponents

    $2y = 3$ cancel the base 2's

   $y = 3/2$ divide each side by 2 and cancel

(48.) $\log_{27} 81 = y$ here is the problem

      $27^y = 81$ write in exponential form

     $(3^3)^y = 3^4$ write as powers of 3

      $3^{3y} = 3^4$ multiply exponents

      $3y = 4$ cancel the base 3's

         $y = 4/3$ divide each side by 3, cancel

(49.) $\log_{1/8} (1/16) = y$ here is the problem

   $(1/8)^y = (1/16)$ write in exponential form

$(1/2)^{3y} = (1/2)^4$ write as powers of 1/2

$3y = 4$ cancel the base 1/2's

$y = 4/3$ divide each side by 3 and cancel

(50.) $\log_a (1/32) = y$ here is the problem

$a^y = 1/32$ write in exponential form

$a = 2$ and $y = -5$