12.2.15) $2 = \log_3 9 \iff 3^2 = 9$

(exponent: 2; base: 3)

17) $0 = \log_{17} 1 \iff 17^0 = 1$

22) $-1 = \log_{10}(0.1) \iff 10^{-1} = \frac{1}{10} = 0.1$

33) $y = \log_8\left(\frac{1}{64}\right) \iff 8^y = \frac{1}{64}$ which means $y = -2$.

$\left(8^{-2} = \frac{1}{8^2} = \frac{1}{64}\right)$

34) $y = \log_3\left(\frac{1}{243}\right) \iff 3^y = \frac{1}{243}$ which means $y = -5$.

$\left(3^{-5} = \frac{1}{3^5} = \frac{1}{243}\right)$

40) $\omega = \log_8 2 \iff 8^\omega = 2$ which means $\omega = 1/3$ since

$8^{1/3} = (2^3)^{1/3} = 2^{3(\frac{1}{3})} = 2$.

41) $\omega = \log_3\left(\frac{1}{3}\right) \iff 3^\omega = \frac{1}{3}$ which means $\omega = -1$

since $3^{-1} = \frac{1}{3}$.

50) $\log_5 125$

Let this number we seek be y.

So $y = \log_5 125$

$5^y = 125$ so $y = 3$ since $5^3 = 125$.