

$$\textcircled{1} \log_4 64 = 3 \quad 4^3 = 64$$

$$\textcircled{2} -2 = \log_7 \left(\frac{1}{49}\right) \quad 7^{-2} = \frac{1}{49}$$

$$\textcircled{3} \log_{81} 3 = \frac{1}{4} \quad 81^{\frac{1}{4}} = 3$$

$$\textcircled{4} \ln 1 = 0 \quad e^0 = 1$$

$$\textcircled{5} 5^3 = 125 \quad \log_5 125 = 3$$

$$\textcircled{6} 8^{\frac{1}{3}} = 2 \quad \log_8 2 = \frac{1}{3}$$

$$\textcircled{7} 9^{-2} = \frac{1}{81} \quad \log_9 \frac{1}{81} = -2$$

$$\textcircled{8} a = b^p \quad \log_b a = p$$

$$\textcircled{9} \log_2 16 = x \quad 2^x = 16 \quad x = 4$$

$$\textcircled{10} \log_{16} 4 = x \quad 16^x = 4 \quad x = \frac{1}{2}$$

$$\textcircled{11} \log_7 7 = x \quad 7^x = 7 \quad x = 1$$

$$\textcircled{12} \log 1000 = x \quad 10^x = 1000 \quad x = 3$$

$$\textcircled{13} \ln e = x \quad x = 1$$

$$\textcircled{14} \log_2 16 = x \quad 2^x = 16 \quad x = 4$$

$$\textcircled{31} \frac{2x}{x+1} = 5 \quad 2x = 5(x+1) \quad 2x = 5x+5 \quad -3x = 5 \quad \emptyset \quad x = \frac{-5}{3}$$

$$\textcircled{32} \log x(x-9) = 1 \quad 10^1 = x(x-9) \quad 10 = x^2 - 9x \quad 0 = x^2 - 9x - 10 \quad (x-10)(x+1) \quad \textcircled{x=10} \quad x \neq -1$$

$$\textcircled{33} A = a(1+r)^t \quad A = 10(1+.55)^8 \quad A = 333.16 \approx 334$$

$$\textcircled{34} A = Pe^{rt} \quad 15000 = 5000e^{.02t} \quad 3 = e^{.02t} \quad .02t = \ln 3 \quad t = \frac{\ln 3}{.02} \quad t = 54.9 \text{ yrs}$$

$$(35) A = Pe^{rt}$$

$$500,000 = 5000e^{r \cdot 50}$$

$$100 = e^{50r}$$

$$50r = \ln 100$$

$$r = \frac{\ln 100}{50}$$

$$r = .092$$

$$r = 9.2\%$$

$$(36) y = ab^x$$

$$= 50(.5)^{\frac{63000}{5760}}$$

$$y = .0259$$