Unit 5 Pg 5 Right

(1) $2^x = 53$

$\log_2 2^x = \log 53$

$x = \frac{\log 53}{\log 2}$

(2) $8^{2x} = 124$

$\log 8^{2x} = \log 124$

$2x \log 8 = \log 124$

$x = \frac{\log 124}{2 \log 8}$

(3) $4^{x+5} = 7$

$(x+5)\log 4 = \log 7$

$x+5 = \frac{\log 7}{\log 4}$

$-5 \quad -5$

$x = \frac{\log 7}{\log 4} - 5$

(4) $2^{x-5} = 9$

$\log_2 9 = x-5$

$x = \log_2 9 + 5$

(5) $e^x = 10$

$\ln_e 10 = x$

(6) $4e^{2x} = 5$

$e^{2x} = \frac{5}{4}$

$\ln_e \frac{5}{4} = 2x$

$x = \frac{1}{2} \ln \frac{5}{4}$

(7) $7 - e^x = 5$

$2 = e^x$

$x = \ln_e 2$

(8) $-14 + 3e^x = 7$

$3e^x = 21$

$e^x = 7$

$x = \ln_e 7$

(9) $7^x = 20$

$\log_7 20 = x$

(10) $9e^{5x} - 4 = 50$

$9e^{5x} = 54$

$e^{5x} = 6$

$\ln 6 = 5x$

$x = \frac{1}{5} \ln 6$

(11) $9^{4x} = 25$

$\log_9 25 = 4x$

$x = \frac{1}{4} \log_9 25$

(12) $6^{x+2} = 17$

$\log_6 17 = x+2$

$x = \log_6 17 - 2$

(13) $7^{x-4} = 8$

$\log_7 8 = x-4$

$x = \log_7 8 + 4$

(14) $e^x = 72$

$\ln_e 72 = x$

(15) $2e^{12x} = 17$

$e^{12x} = \frac{17}{2}$

$\ln \frac{17}{2} = 12x$

$x = \frac{1}{12} \ln \frac{17}{2}$

(16) $e^x + 5 = 60$

$e^x = 55$

$\ln 55 = x$

(17) $100e^{5x} = 750$

$e^{5x} = 7.5$

$\ln 7.5 = 5x$

$x = \frac{1}{5} \ln 7.5$

(18) $8^x = 4$

$\log_8 4 = x$

(19) $\log 3^{4x} = \log 3^{3-x}$

$4x = 3-x$

$5x = 3$

$x = \frac{3}{5}$

(20) $5^{n-3} = \frac{1}{25}$

$\log_5 \frac{1}{25} = n-3$

$+3 \quad +3$

$n = \log_5 \frac{1}{25} + 3$

$n = 1$

(21) $7^{2x} = \frac{1}{49}$

$7^{2x} = 7^{-2}$

$2x = -2$

$x = -1$