(25) $e^x = e^{x^2-2}$

$x = x^2 - 2$

$0 = x^2 - 2 - x$

2, -1

p254 Pre calc

(26) $e^{2x} = e^{x^2-8}$

$2x = x^2 - 8$

$x^2 - 2x - 8 = 0$

$(x-4)(x+2)$

$x = 4, -2$

(27) $e^{x^2-3} = e^{x-2}$

$x^2 - x - 1 = 0$

$\frac{1 \pm \sqrt{5}}{2}$

1.618

-.618

(28) $e^{-x^2} = e^{x^2-2x}$

$-x^2 = x^2 - 2x$

$2x^2 - 2x = 0$

$2x(x-1) = 0$

$x = 0, 1$

(29) $\frac{4}{4}(3^x) = \frac{20}{4}$

$3^x = 5^x$

1.465

(30) $\frac{2}{2}(5^x) = \frac{32}{2}$

$5^x = 16$

$x \frac{\log 5}{\log 5} = \frac{\log 16}{\log 5}$

$x = 1.723$

(31) $\frac{2}{2}e^x = \frac{10}{2}$

$\ln 5 \approx 1.609$

(32) $\frac{4}{4}e^x = \frac{91}{4}$

$e^x = 22.75$

$x = 3.124$

(33) $e^x - 9 = 19$

$e^x = 28$

$\ln 28 \approx 3.33$

(34) $6^x + 10 = 47$

$6^x = 37$

$x \frac{\log 6}{\log 6} = \frac{\log 37}{\log 6}$

$x = 2.015$

(35) $3^{2x} = 80$

$2x \frac{\log 3}{\log 3} = \frac{\log 80}{\log 3}$

$2x = 3.988$

(36) $6^{5x} = 3000$

$\log 6^{5x} = \log 3000$

$5x \log 6 = \log 3000$

$\frac{\log 6}{\log 6}$

$\frac{5x}{5} = \frac{4.468}{5}$

$x = .8936$

(37) $5^{-\frac{t}{2}} = .20$

$-\frac{t}{2} \log 5 = \log .20$

$\frac{\log}{\log}$

$\frac{\log .20}{\log 5}$

$(-2) -\frac{t}{2} = -1 (-2)$

$t = 2$

(38) $4^{-3t} = .10$

$-3t \log 4 = \log .10$

$\frac{\log 4}{\log 4}$

$-3t = -1.6609$

$\frac{-3}{-3}$

$t = .5536$

(39) $3^{x-1} = 27$

$3^{x-1} = 3^3$

$x - 1 = 3$

$+1 \quad +1$

$x = 4$

(40) $2^{x-3} = 32$

$x - 3 \log 2 = \log 32$

$\frac{\log 2}{\log 2} \quad \frac{\log 2}{\log 2}$

$x - 3 = 5$

$+3 \quad +3$

$x = 8$

(41) $7^{3-x} = 565$

$3 - x \log 7 = \frac{\log 565}{\log 7}$

$3 - x = 9.14$

$+x = -6.142$

(42) $8^{-2-x} = 431$

$-2 - x \log 8 = \frac{\log 431}{\log 8}$

$-2 - x = 2.917$

$+2 \quad +2$

$-x = 4.917$

$x = -4.917$

(43) $\frac{8}{8}(10^{3x}) = \frac{12}{8}$

$10^{3x} = 1.5$

$\frac{3x}{3} \log 10 = \frac{\log 1.5}{3}$

$x = .056$

(44) $\frac{5}{5}(10^{x-6}) = \frac{7}{5}$

$10^{x-6} = \frac{7}{5}$

$x - 6 \log 10 = \log \frac{7}{5}$

6.14

(45) $3(5^{x-1}) = 21$

$5^{x-1} = 7$

$x - 1 \log 5 = \frac{\log 7}{\log 5}$

2.209

(46) $8(3^{6-x}) = 40$

$3^{6-x} = 5$

$6 - x \log 3 = \frac{\log 5}{\log 3}$

$\log 3$

$6 - x = 1.46$

$x = 4.53$

(47) $e^{3x} = 12$

$3x \ln e = \ln 12$

$x = .828$

(48) $e^{2x} = 50$

$2x \ln e = \frac{\ln 50}{\ln e}$

$\ln e$

$x = 1.956$

(49) $500e^{-x} = 300$

$\frac{500}{500}$

$-x \ln e = \ln \frac{3}{5}$

$x = .5108$

(50) $\frac{1000}{1000} e^{-4x} = \frac{25}{1000}$

$e^{-4x} = .025$

$-4x \ln e = \ln .025$

$x = .647$