

3.4

$$a^{\textcircled{x}} = a^{\textcircled{y}}$$

$$x = y$$

$$2^5 = 2^y$$

$$5 = y$$

$$32 = 2^5$$

$$32 = 32$$

$$\log_a \textcircled{x} = \log_a \textcircled{y}$$

$$x = y$$

$$2^x = 32$$

$$2^{\textcircled{x}} = 2^{\textcircled{5}}$$

$$x = 5$$

or

$$2^x = 32$$

$$\log_2 2^x = \log_2 32$$

$$x = \frac{\log 32}{\log 2} \quad \text{Calc}$$

$$x = 5$$

Change
of
Base

$$\log_2 2^x = \log_2 2^5$$

$$x = 5$$

Solve

$$\ln x - \ln 2 = 0$$
$$+ \ln 3 \quad + \ln 3$$

$$\ln x = \ln 3$$

$$x = 3$$

$$\text{Ex. } e^x = 7$$

$$\ln e^x = \ln 7$$

$$x = 1.946 \quad \text{Calc}$$

$$\text{Ex. } \ln x = -3$$

$$e^{\ln x} = e^{-3}$$

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

$$x = .0498$$

$$4^x = 72$$

$$\log_4 4^x = \log_4 72$$

$$x = \log_4 72$$

Change of
Base

$$x = \frac{\log 72}{\log 4}$$

$$\text{or } x = \frac{\ln 72}{\ln 4}$$

$$x = 3.085$$

$$e^x + 5^{-5} = 60$$

$$e^x = 55$$

$$\ln e^x = \ln 55$$

$$x = 4.007$$

$$e^{2x} - 3e^x + 2 = 0$$

$$(e^x)^2 - 3e^x + 2 = 0$$

Quadratic
Form

$$(e^x - 2)(e^x - 1) = 0$$

Factor

$$e^x - 2 = 0 \quad e^x - 1 = 0$$

$$e^x = 2 \quad e^x = 1$$

$$\ln e^x = \ln 2 \quad \ln e^x = \ln 1$$

$$x = .693$$

$$x = 0$$