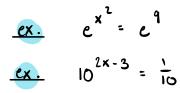
FAC1: IF
$$a^{x} = a^{y}$$
THEN $x = y$



GUIDELINES FOR SOLVING EXPONENTIAL EQUATIONS

- 1. Isolate the exponential expression on one side of the equation.
- 2. Take the logarithm of each side, then use the Laws of Logarithms to "bring down the exponent."
- 3. Solve for the variable.

$$e_{x}$$
. 5^{3x-1}

28.
$$2(5 + 3^{x+1}) = 100$$

30.
$$1 + e^{4x+1} = 20$$

32.
$$125^x + 5^{3x+1} = 200$$

34.
$$10^{1-x} = 6^x$$

36.
$$7^{x/2} = 5^{1-x}$$

$$38. \ \frac{10}{1+e^{-x}}=2$$

GUIDELINES FOR SOLVING LOGARITHMIC EQUATIONS

- 1. Isolate the logarithmic term on one side of the equation; you might first need to combine the logarithmic terms.
- 2. Write the equation in exponential form (or raise the base to each side of the equation).
- 3. Solve for the variable.



49. $\log x + \log(x - 1) = \log(4x)$ * FALSE GOLD*

50. $\log_5 x + \log_5(x+1) = \log_5 20$

51. $2 \log x = \log 2 + \log(3x - 4)$

52. $\ln(x - \frac{1}{2}) + \ln 2 = 2 \ln x$

53. $\log_2 3 + \log_2 x = \log_2 5 + \log_2 (x - 2)$

54. $\log_4(x+2) + \log_4 3 = \log_4 5 + \log_4(2x-3)$

62. $\log_2(x^2 - x - 2) = 2$

63. $\log_2 x + \log_2 (x - 3) = 2$

64. $\log x + \log(x - 3) = 1$

65. $\log_9(x-5) + \log_9(x+3) = 1$

66. $\ln(x-1) + \ln(x+2) = 1$

67. $\log_5(x+1) - \log_5(x-1) = 2$

68. $\log_3(x+15) - \log_3(x-1) = 2$