Name _____ Date _____

# Logarithmic Expressions - Guided Lesson Explanation

**Note: All the problems involve the use of the symbol "ln" instead of "log".**

**Explanation#1**

**Step 1: Property#1: $\ln a^x = x \ln a$**

**Given that:**

**$\ln [(3x-9)(2x+5)]^3$**

**Applying it we get:**

**$3\ln [(3x-9)(2x+5)]$**

**Step 2: Property#2: $\ln a*b = \ln a + \ln b$**

**Applying it we get:**

**$3\ln [\ln (3x-9) + \ln (2x+5)]$**

**Hence, Answer: $\ln [(3x-9)(2x+5)]^3 = 3[\ln (3x-9) + \ln (2x+5)]$**

**Explanation#2**

**We know: $\log_a y = x$ is equivalent to $a^x = y$**

**Here, $a = 8$ & $y = 28$**

**This can be rewritten as:**

**The logarithm form of $8^x = 28$ is: $\log_8 28 = x$**

**Solve for x: $\log_3 x = 8$**

**Explanation#3**

**We know: $\log_a y = x$ is equivalent to $a^x = y$**

**Given that: $\log_3 x = 8$**

**Hence, $x = 8^3$**

**$x = 6561$**