Solving Exponential and Logarithm Equations, Day 1

Under each number, rewrite using exponentials:

4	8	9	16	25	27	32	36	64	81	125	1/4	1/8

Solving by Common Base: Exponentials

If possible, rewrite the equation where both sides are expressed as powers of the same base. Then, the exponents will be equal to each other and you can solve.

1. $7^{6x} = 7^{2x-20}$

2. $e^{2x-7} = e^{5x+4}$

3. $2^{2x} = 8^{2x-1}$

4. $4^{x} = 32$

5. $9^{x-4} = {}^{1}/_{81}$

6. $25^{10x+8} = ({}^{1}/_{125})^{4-2x}$

Solving by Common Base: Logarithms

If possible, write both sides of the equation with a common base and set the arguments (power) equal to each other.

7. $\log_5(x+7) = \log_5(2x-3)$

8. $\log_4(3x + 2) = \log_4(6-x)$

If the common base is not possible, use log properties and write your equation as a single log and convert to an exponential. If exponential then isolate and convert to a logarithm and solve.

9. $\log_4(3x-5) = 3$

10. $\ln(x-1) - \ln x = 2$

11. $\log_4(x-3) + \log_4(X + 3) - \log_4(x + 3) = 3$

12. $5 - 3e^x = 2$

13. $e^{\ln x} = 4$

14. $(6)^{-4x} + 1 = 6$

15. $6+ 3\ln x = 4$