EXPONENTIAL & LOGARITHMIC EQUATIONS SORT

A) $2^{x-1} = 8^2$

B) $\ln x - \ln 2 = 0$

C) $5^{-\frac{x}{2}} = 0.20$

D) $3^{x-1} = \frac{1}{27}$

E) $7 - 2e^x = 5$

F) $\ln(x+5) = \ln(x-1) - \ln(x+1)$

G) $\log_2(2x-3) = \log_2(x+4)$

H) $\log_4 x - \log_4(x-1) = \frac{1}{2}$

I) $\log_5 3 - \log_5 5x = 2$

J) $7\log_9(x+8) = 7$

K) $5^x = 125$

L) $2^x + 3 = 29$

Extra credit:

Pick 2 from each box to solve on the back of the sheet. Show all of your work/steps.

exponential & logarithmic equation sort

Exponential (one-to-one)

- you will be able to write both sides as powers with the SAME BASE

If $b^m = b^p$ then $m=p$

Ⓐ $2^{x-1} = 8^2$

Ⓒ $5^{-\frac{x}{2}} = 0.20$

Ⓓ $3^{x-1} = \frac{1}{27}$

Ⓚ $5^x = 125$

Exponential (Inverse)

- Not able to write both sides as powers with the same base.

If $b^x = a$ then $\log_b a = x$

Ⓔ $7 - 2e^x = 5$

Ⓛ $2^x + 3 = 29$

Logarithmic (one-to-one)

- All terms on both sides will be logarithms with the SAME BASE

If $\log_b m = \log_b p$ then $m=p$

Ⓑ $\ln x - \ln 2 = 0$

Ⓕ $\ln(x+5) = \ln(x-1) - \ln(x+1)$

Ⓖ $\log_2(2x-3) = \log_2(x+4)$

OR

Logarithmic (Inverse)

- If the equation has one nonzero constant term and all other terms are logarithms.

If $\log_b x = c$ then $b^c = x$

Ⓑ $\ln x - \ln 2 = 0$

Ⓗ $\log_4 x - \log_4(x-1) = \frac{1}{2}$

Ⓘ $\log_5 3 - \log_5 5x = 2$

Ⓙ $7\log_9(x+8) = 7$