Section 5.4: cont'd

Wednesday, February 10, 2016
9:35 AM

Assign 3: due on

Tues Feb 23

Quiz 3 on

Fr., Feb 26

covering Chapter 5 on Exponents & Logs (plus inverse functions)

→ if you need Newton's Law of Cooling, I will give it to you

---

further rules:

$\log_a a^x = x$ and $a^{\log_a x} = x$

$\Downarrow$

$\log_a a = 1$

$\log_a 1 = 0$

↑ why?

$a^{\log_a x} = y$

$\log_a x = \log_a y$

$x = y$

examples: simplify

$\log_a x^4 = 4$

$\log_x x^4 = 4$

$\log_a \sqrt[3]{a} = 1/3$

$17^{\log_{17} y} = y$ $\Rightarrow$ $17^{\log_{17} y} = x$

$\ln e^x = x$ $\log_{17} y = \log_{17} x$

$y = x$

Trickier:

$8^{\log_8 3} = 3$

$8^{2\log_8 3} = 8^{\log_8 3^2} = 3^2$ or 9

$8^{\log_2 3} = (2^3)^{\log_2 3} = 2^{3\log_2 3} = 2^{\log_2 3^3} = 3^3 = 27$

$8^{\log_8 2 + \log_8 3} = 8^{\log_8 6} = 6$

or

$8^{\log_8 2 + \log_8 3} = 8^{\log_8 2} \; 8^{\log_8 3}$

$= 2 \cdot 3$

$= 6$