(5-12) 6-3 Logarithms Solutions

Tuesday, April 28, 2020 9:38 AM

PG 318 # 2,5-7,25-33 odd, 32,38,39,45,47,50

(2) student brought the negative sign outside the expression, which is not equivalent step.

(5) $\log_2\left(\frac{1}{64}\right) = -6$

(6) $\ln 54.6 \approx 4$

(7) $10^{2.301} \approx 200$

(25) $\log_5 1 = 0$

(27) $10^{-2} = \frac{1}{100}$ * remember log with no visible base is the common logarithm

(29) $e^5 = 148.41$

(31) $5^{-3} = \frac{1}{125}$

(32) undefined ; $\log_6(-216)$ cannot be negative

(33) 4 ; $\cancel{\log_3 3}$ 4 special logarithm

(38) a ; $\cancel{\log_7 7}$ a

(39) use calculator

<log> <78.5> <enter>

$= 1.8949$

(45) $\log_{10}(7x+6) = 3$

$10^3 = 7x+6$ convert to exponential.

$1000 = 7x+6$ solve for x

$-6 \qquad -6$

$994 = 7x$

$142 = x$

$994 = 7x$

$142 = x$

(47) $\ln(3x-1) = 2$

$\log_e(3x-1) = 2$

* remember ln is the natural logarithm
  $\ln = \log_e$

$e^2 = 3x - 1$

$+1$

* convert to exponential form
* solve for x

put in calc →

$\frac{e^2+1}{3} = \frac{3x}{3}$

$2.7964 = x$

(50) $\log(x-3) = -1$

$\log_{10}(x-3) = -1$

* remember log is common logarithm
  $\log_{10}$

exponent properties

$10^{-1} = x - 3$

$\frac{1}{10} = x - 3$

$+3 \qquad +3$

* convert to exponential
* solve for x

$\frac{1}{10} + 3 = x$

$\frac{1}{10} + \frac{30}{10} = x$

$\frac{31}{10} = x$

$3.1 = x$