

Quiz 10.1/10.2

Homework Questions?

(24) $\ln(x-2) - \ln(x^2-4) - 3\ln x^3$

$$\ln \frac{x-2}{x^2-4} \cdot \frac{1}{x^3} \quad \frac{(x-2)}{(x+2)(x-2)} \cdot \frac{1}{x^3}$$

$$\ln \frac{1}{(x+2)x^3}$$

Mar 29-9:25 AM

Jan 26-8:35 AM

(28) $\ln .5$ $\log_e .5$
 $-.693$ $\frac{\log .5}{\log e}$

Solving Logs and Inverse Logs

1. combine logs
2. isolate
3. change forms
4. check answer for extraneous solutions

(3) $\log_6 X + \log_6 3 = 2$ combine logs
 $\log_6(3X) = 2$ isolate
 $6^2 = 3X$ change forms
 $\frac{36}{3} = \frac{3X}{3}$

$X=12$

Apr 21-10:12 AM

Jan 26-8:32 AM

$\log_6 12 + \log_6 3 = 2$

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 A. Log Base log Base

(9)

$$\log_3(x+6) = 1 - \log_3(x+4)$$

$$+ \log_3(x+4) \quad + \log_3(x+4)$$

$$\log_3(x+6)(x+4) = 1$$

$$\log_3(x^2 + 10x + 24) = 1$$

combine the logs
isolate

Apr 21-10:22 AM

Feb 2-4:01 PM

$$3^1 = x^2 + 10x + 24$$

$$x^2 + 10x + 21 = 0$$

$$(x+3)(x+7) = 0$$

$x = -3$ ~~$x = -7$~~

Apr 21-10:28 AM

$$\log_3(-3+6) = 1 - \log_3(-3+4)$$

$$\log_3 3 = 1 - \log_3 1$$

$$1 = 1$$

Apr 21-10:29 AM

1. Isolate base ^{power}

13) $30e^{.6x} = 240$ Isolate

$$\frac{30e^{.6x}}{30} = \frac{240}{30}$$

$$e^{.6x} = 8$$
 change forms
$$\log_e 8 = .6x$$

$$\frac{\ln 8}{.6} = \frac{.6x}{.6}$$

$$x = \frac{\ln 8}{.6} \approx 3.47$$

Feb 2-4:00 PM

15)

$$\frac{3 \cdot 4^{2x-1}}{3} = \frac{42}{3}$$

$$4^{2x-1} = 14$$

$$\log_4 14 = 2x-1$$

Feb 2-4:01 PM

$$\log_4 14 = 2x-1$$

$$\frac{\log 14}{\log 4}$$

$$1.90 = 2x - 1$$

$$+1 \quad +1$$

$$\frac{2.90}{2} = \frac{2x}{2}$$

$x = 1.45$

Apr 21-10:40 AM

Inverses

1. Switch x & y
2. Solve for y

1) $f(x) = \log(x+7) - 2$

$$x = \log(y+7) - 2$$

$$x+2 = \log(y+7)$$

$$10^{(x+2)} = y+7$$

$$f^{-1}(x) = 10^{(x+2)} - 7$$

Feb 2-4:02 PM

$$f(x) = \log_6(x - 10) - 3$$
$$x = \log_6(y - 10) - 3$$
$$x + 3 = \log_6(y - 10)$$
$$6^{(x+3)} = y - 10$$
$$f^{-1}(x) = 6^{(x+3)} + 10$$

Mar 29-9:28 AM