

Quiz 2

NAME:

PERM:

SECTION: T 8 AM / T 4 PM / T 5 PM / T 6 PM / TH 6 PM

1. Find the inverse of the function

$$f(x) = 2e^{2x+1}.$$

$$y = 2e^{2x+1}$$

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

$$\ln\left(\frac{y}{2}\right) = \ln(e^{2x+1})$$

$$\ln\left(\frac{y}{2}\right) = 2x+1$$

$$\ln\left(\frac{y}{2}\right) - 1 = 2x$$

$$x = \frac{\ln\left(\frac{y}{2}\right) - 1}{2}$$

$$\text{so } f^{-1}(x) = \frac{\ln\left(\frac{x}{2}\right) - 1}{2}.$$

2. Express the following using a single logarithm:

$$2\log(x) - 3\log(x-1) + \frac{1}{2}\log(x+2).$$

$$= \log(x^2) - \log((x-1)^3) + \log((x+2)^{\frac{1}{2}})$$

$$= \log\left(\frac{x^2 (x+2)^{\frac{1}{2}}}{(x-1)^3}\right).$$