

1. (6 points) Starting with the graph of  $y = e^{-2x}$ , write the equation of the graph that results from

(a) shifting 3 units to the left

$$y = e^{-2(x-(-3))} = e^{-2(x+3)} = e^{-2x-6}$$

(b) reflecting about the  $y$ -axis

$$y = e^{-2(-x)} = e^{2x}$$

(c) reflecting about the  $x$ -axis and then about the  $y$ -axis

$$y = -e^{-2(-x)} = -e^{2x}$$

2. (2 points) Express  $\ln(a+b) - 2\ln(a-b)$  as a single logarithm.

$$\begin{aligned} &= \ln(a+b) - \ln((a-b)^2) \\ &= \ln\left(\frac{a+b}{(a-b)^2}\right) \end{aligned}$$

3. (2 points) Simplify the expression  $\cos(\arcsin(x))$ .

$$\text{let } \theta = \arcsin(x).$$

$$\text{then } \sin \theta = x$$

$$\text{and } \cos \theta = \frac{\sqrt{1-x^2}}{1} = \sqrt{1-x^2}.$$

