

Show all relevant work for each problem. Little to no work, even with a correct answer, will receive little to no credit.

1. Use rules of logarithms to rewrite the following expression as sums, differences, and/or multiples of logarithms. Do not leave any negative exponents.

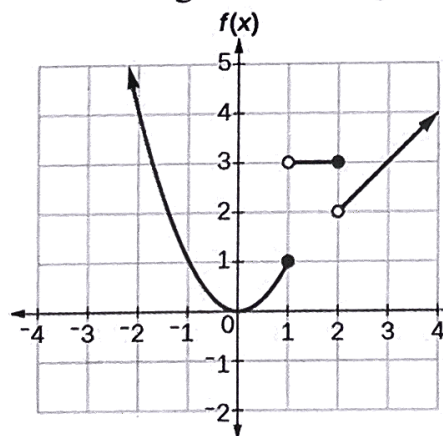
$$\ln\left(\frac{w^2x^5}{y^3z^8}\right)$$

$$= \ln(w^2x^5) - \ln(y^3z^8)$$

$$= \ln(w^2) + \ln(x^5) - [\ln(y^3) + \ln(z^8)]$$

$$= 2\ln(w) + 5\ln(x) - 3\ln(y) - 8\ln(z)$$

2. Find the following values using the graph of $f(x)$.



$$\lim_{x \rightarrow 2^-} f(x) = 3$$

$$\lim_{x \rightarrow 2^+} f(x) = 2$$

$$\lim_{x \rightarrow 2} f(x) = \text{DNE}$$

$$f(2) = 3$$