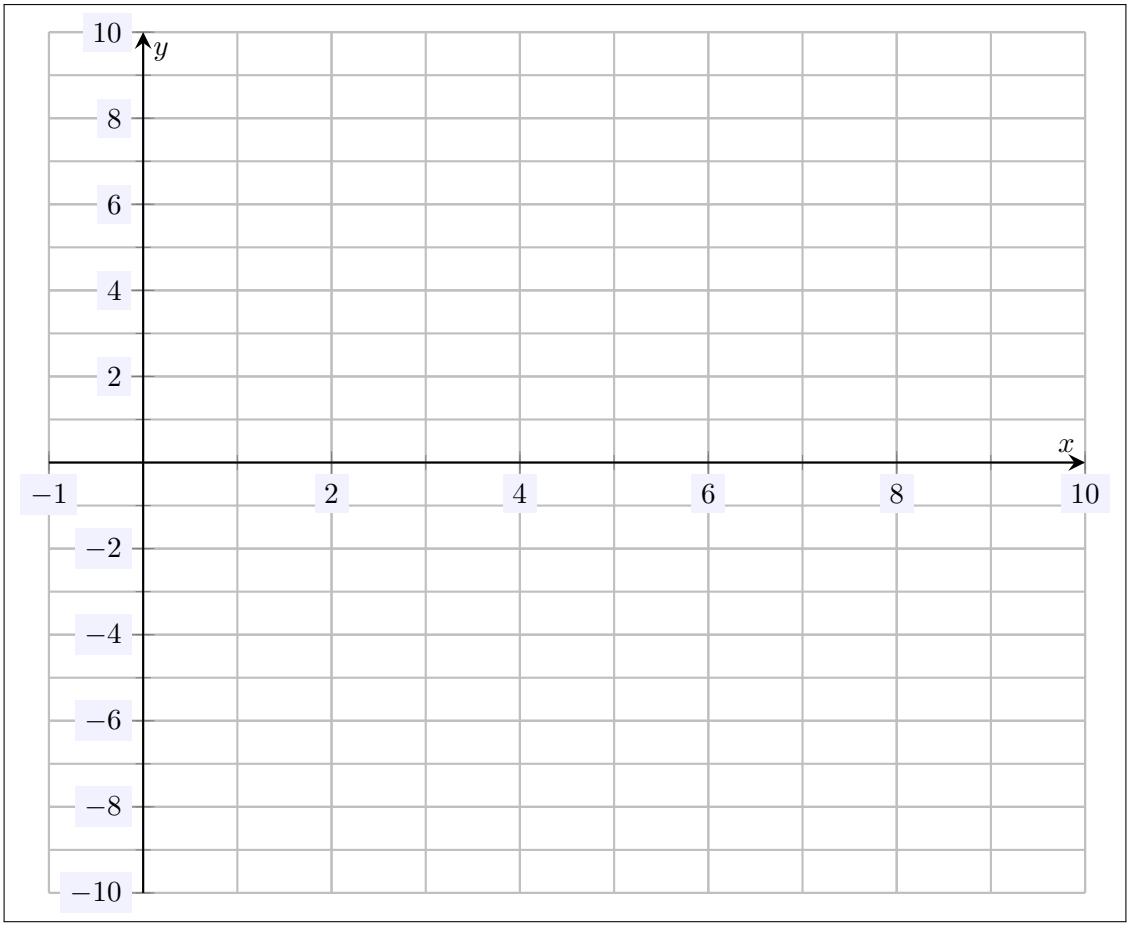
**Name:** _____

**MATH 101**
**Fall 2021**
**HW 17: Due 11/23**

*"I was on the street. This guy waved to me, and he came up to me and said, 'I'm sorry. I thought you were someone else.' And I said, 'I am.'"*
*–Demetri Martin*

**Problem 1.** (10pt) Sketch the function $y = \log_2 x$.



**Problem 2.** (10pt) Compute the following:

(a) $\log_4 4 - \log_6 1$

(b) $\log_5 25$

(c) $\log_3 \dfrac{1}{81}$

(d) $\log_9 \sqrt{3}$

(e) $\ln e^{2/3}$

**Problem 3.** (10pt) Expand the following logarithm completely by expressing it as a sum or difference of logs. Your answer should not include any exponents.

$$\log_3\left(\frac{\sqrt[6]{x}}{3y^4}\right)$$

**Problem 4.** (10pt) Rewrite the expression below as a single logarithm.

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