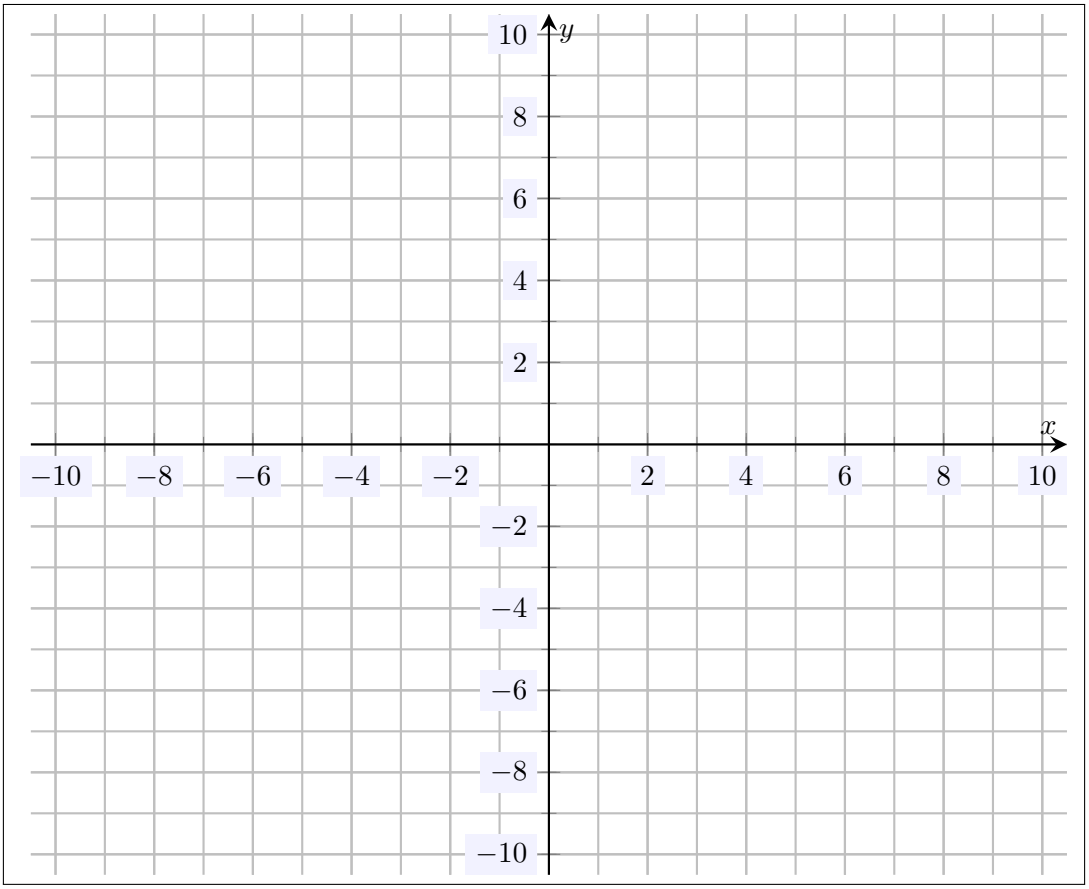
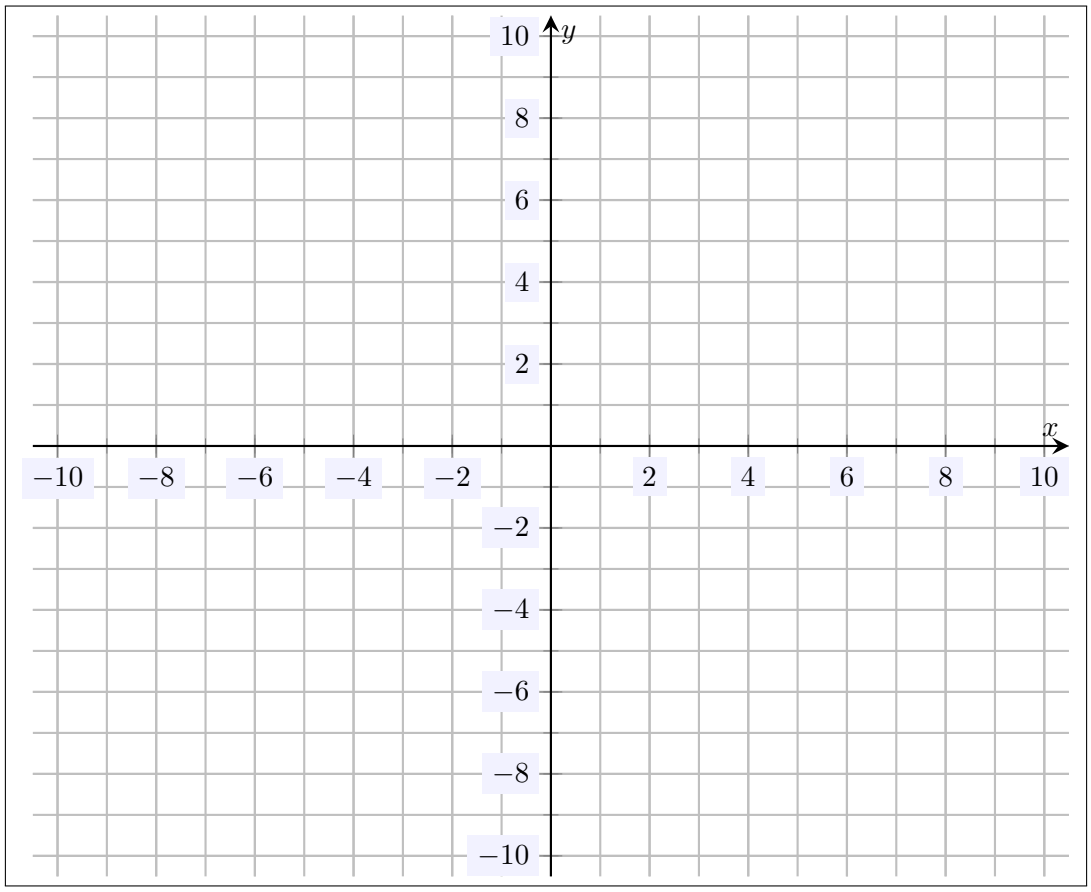
Name: _____
MATH 101
Winter 2021
HW 10: Due 01/20

"I'm fast. To give you a reference point, I'm somewhere between a snake and a mongoose. . . and a panther."
–Dwight Schrute, The Office

Problem 1. (10pt) Sketch the function $y = 10\left(\frac{1}{2}\right)^x$.



Problem 2. (10pt) Sketch the function $y = 5 - 2^{1-x}$.



Problem 3. (10pt) Write function $f(x) = 2\left(\frac{1}{3}\right)^{2-x}$ in the form $f(x) = Ab^x$, identifying A and b, and determine whether the function $f(x)$ is increasing or decreasing.

Problem 4. (10pt) Write function $f(x) = -5\left(\frac{1}{3}\right)^{2-x}$ in the form $f(x) = Ab^x$, identifying A and b, and determine whether the function $f(x)$ is increasing or decreasing.

Problem 5. (10pt) Write function $f(x) = 6 - 2^{1-2x}$ in the form $f(x) = Ab^x + C$, identifying A, b, and C, and determine whether the function $f(x)$ is increasing or decreasing.

Problem 6. (10pt) Consider the function $y = -25(5^{-3x})$.

(a) Is the function increasing or decreasing? Explain.

(b) Find the y-intercept of this function.

(c) What are the x-intercepts and zeros for this function?

(d) Find $y(-1)$.

Problem 7. (10pt) Showing all your work, solve the following equation:

$$3^{1-x} = 27$$

Problem 8. (10pt) Showing all your work, solve the following equation:

$$64^x = \frac{1}{2}$$

Problem 9. (10pt) Showing all your work, solve the following equation:

$$2\left(\frac{1}{3}\right)^{-x} - 59 = -5$$

Problem 10. (10pt) Showing all your work, solve the following equation:

$$2^{3x} - 7 = 9$$