Author 1 _____ Day 1 ☐ Day 2 ☐

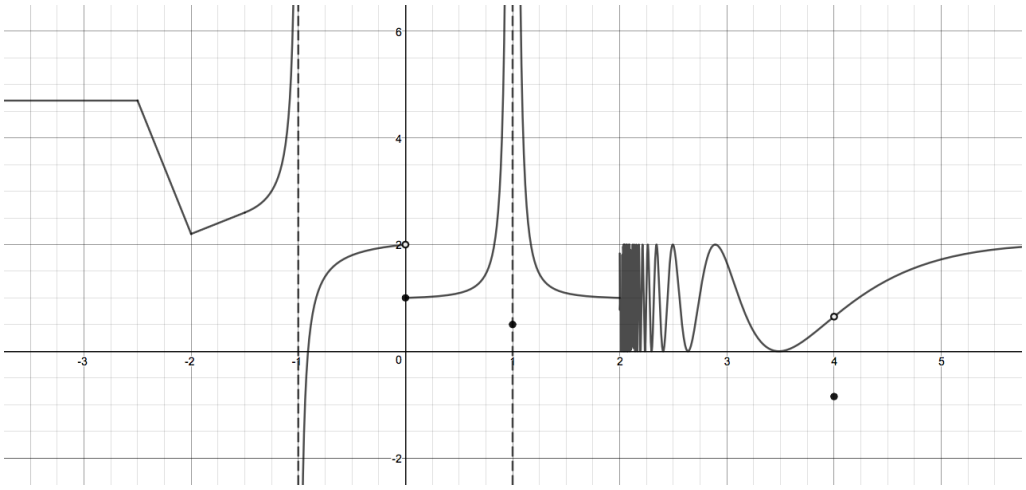
Author 2 _____ ☐ ☐

Author 3 _____ ☐ ☐

Author 4 _____ ☐ ☐

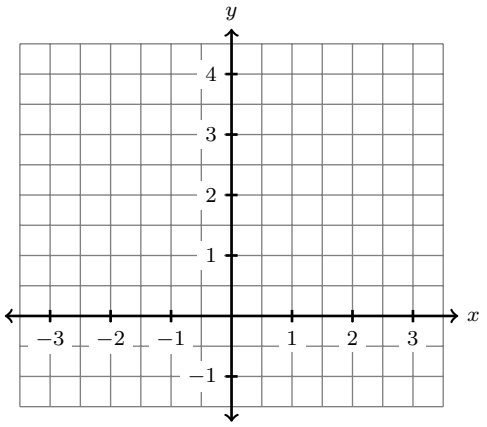
Group Work 04

1. Suppose the graph of $y = f(x)$ is given below. Find all values for x where f is discontinuous.



2. Sketch the graph of $y = f(x)$ (defined below), and find all values for x where f is discontinuous.

$$f(x) = \begin{cases} x + 1 & \text{if } x < 0 \\ e^x & \text{if } 0 \le x \le 1 \\ 2 - x & \text{if } x > 1 \end{cases}$$

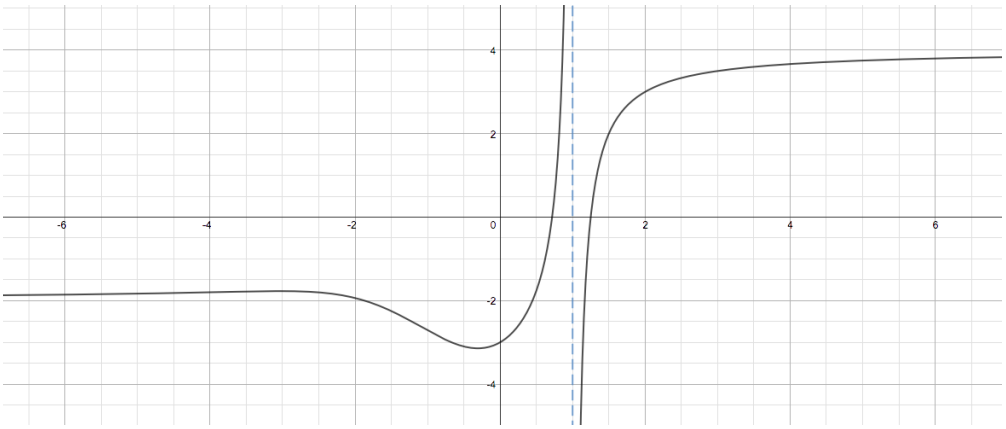


3. *True or False:* the function $f(x) = \tan(x)$ is continuous on its domain. Make sure to explain!

4. For what value of the constant c is the function f continuous on $(-\infty, \infty)$?

$$f(x) = \begin{cases} cx^2 + 2x & \text{if } x < 2 \\ x^3 - cx & \text{if } x \geq 2 \end{cases}$$

5. Find all vertical and horizontal asymptotes of the graph given below.



6. Find the following limits.

(a) $\lim_{x \to \infty} \frac{1}{x}$ $\lim_{x \to -\infty} \frac{1}{x}$

(b) $\lim_{x \to \infty} x$ $\lim_{x \to -\infty} x$

(c) $\lim_{x \to \infty} e^x$ $\lim_{x \to -\infty} e^x$

(d) $\lim_{x \to \infty} \sin x$ $\lim_{x \to -\infty} \sin x$

(e) $\lim_{x \to \infty} (e^x - xe^x)$

(f) $\lim_{x \to \infty} (x - \cos x)$

(g) $\lim_{x \to \infty} \left(\frac{1}{x} - \cos x \right)$