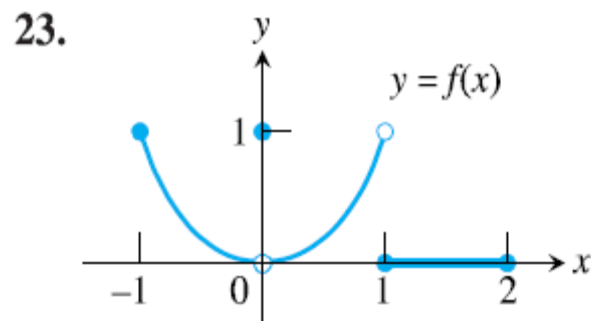Name _____

Homework #10B
- p.84 (20, 21, 23, 48, 49)

In Exercises 19–24, **(a)** find each point of discontinuity. **(b)** Which of the discontinuities are removable? not removable? Give reasons for your answers.

20. $f(x) = \begin{cases} 3 - x, & x < 2 \\ 2, & x = 2 \\ x/2, & x > 2 \end{cases}$

21. $f(x) = \begin{cases} \dfrac{1}{x - 1}, & x < 1 \\ x^3 - 2x + 5, & x \geq 1 \end{cases}$

23.

48. *Continuous Function* Find a value for a so that the function

$$f(x) = \begin{cases} 2x + 3, & x \leq 2 \\ ax + 1, & x > 2 \end{cases}$$

is continuous.

49. *Continuous Function* Find a value for a so that the function

$$f(x) = \begin{cases} 4 - x^2, & x < -1 \\ ax^2 - 1, & x \geq -1 \end{cases}$$

is continuous.

1. **Given $f(x) = 2x - 3$, find $f(x + h)$.**
   - **(A)** $2x + 2h - 3$
   - **(B)** $2x + h - 3$
   - **(C)** $x + h$
   - **(D)** $x + h - 3$
   - **(E)** $2(x + h)$

2. **The graph of $f(x) = \dfrac{x^2 - 1}{x - 1}$ has**
   - **(A)** a hole at $x = 1$
   - **(B)** a hole at $x = -1$
   - **(C)** a vertical asymptote at $x = 1$
   - **(D)** a vertical asymptote at $x = -1$
   - **(E)** $f(1) = 2$

3. $f(x) = \dfrac{(x - 1)^2}{x^2 - 1}$ **has**
   - **(A)** a hole at $x = -1$
   - **(B)** holes at $x = -1$ and $x = 1$
   - **(C)** vertical asymptotes at $x = 1$ and $x = -1$
   - **(D)** a horizontal asymptote at $y = -1$
   - **(E)** a hole at $x = 1$ and a vertical asymptote at $x = -1$