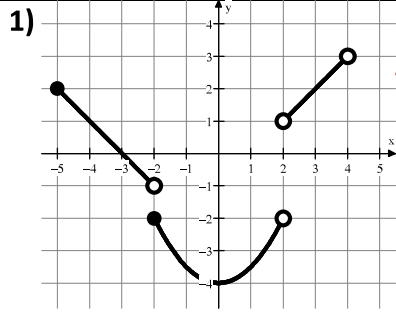


### 2.3 Practice – Limits (Graphically)

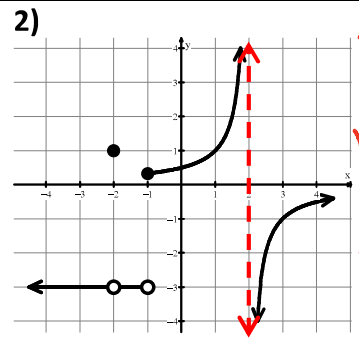
Name: \_\_\_\_\_

Pre-Calculus

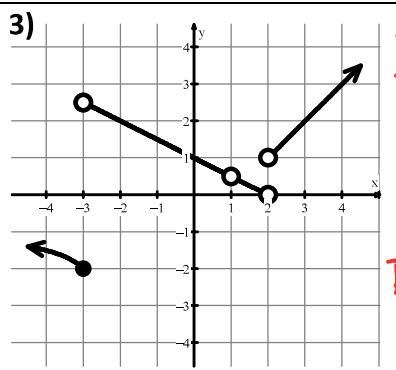
For 1-4, identify the  $x$ -values of each discontinuity, and write if it is removable or not. If it is nonremovable then classify the type.



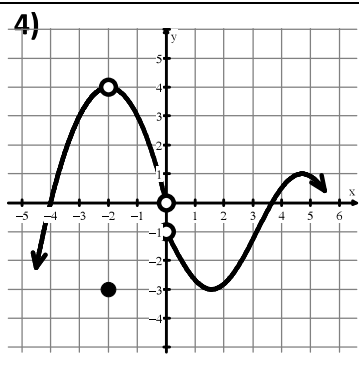
1) nonremovable  
Jump Disc @  $x = -2, 2$



2) Removable disc @  $x = -2$   
Nonremovable jump disc @  $x = -1$   
Nonremovable infinite disc @  $x = 2$



3) nonremovable Jump Disc @  $x = -3, 2$   
Removable Disc @  $x = 1$

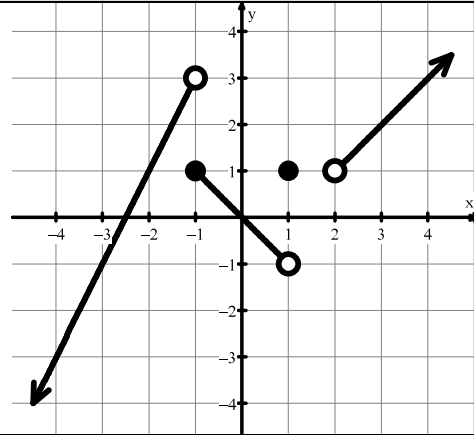


4) Removable disc @  $x = -2$   
nonremovable Jump Disc @  $x = 0$

For 5-8, give the value of each statement. If the value does not exist, write "does not exist" or "undefined."

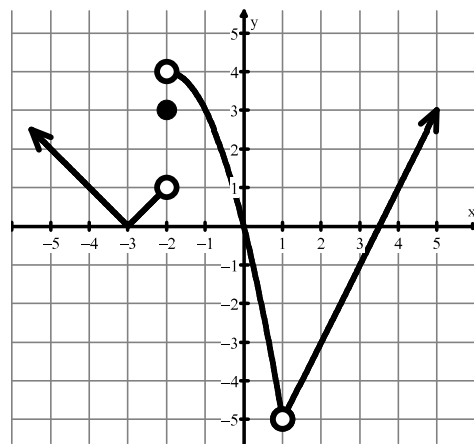
- 5)
- a.  $\lim_{x \rightarrow -1^-} f(x) = 3$
  - c.  $\lim_{x \rightarrow 0} f(x) = 0$
  - e.  $f(-1) = 1$
  - g.  $\lim_{x \rightarrow -1^+} f(x) = 1$
  - i.  $\lim_{x \rightarrow 2} f(x) = \text{dne}$

- b.  $f(1) = 1$
- d.  $\lim_{x \rightarrow 2^+} f(x) = 1$
- f.  $\lim_{x \rightarrow 1^-} f(x) = -1$
- h.  $f(2) = \text{dne}$
- j.  $\lim_{x \rightarrow 1} f(x) = \text{dne}$



- 6)
- a.  $\lim_{x \rightarrow -3} f(x) = 0$
  - c.  $\lim_{x \rightarrow 1} f(x) = -5$
  - e.  $f(3) = -1$
  - g.  $\lim_{x \rightarrow 2} f(x) = \text{dne}$
  - i.  $\lim_{x \rightarrow -1} f(x) = 3$

- b.  $f(1) = \text{dne}$
- d.  $\lim_{x \rightarrow 2^+} f(x) = 4$
- f.  $\lim_{x \rightarrow -2^-} f(x) = 1$
- h.  $f(-2) = 3$
- j.  $\lim_{x \rightarrow 1^-} f(x) = -5$



7)

a.  $\lim_{x \rightarrow 3^+} f(x) = 1$

b.  $f(3) = \text{dne}$

c.  $\lim_{x \rightarrow 0} f(x) = 1$

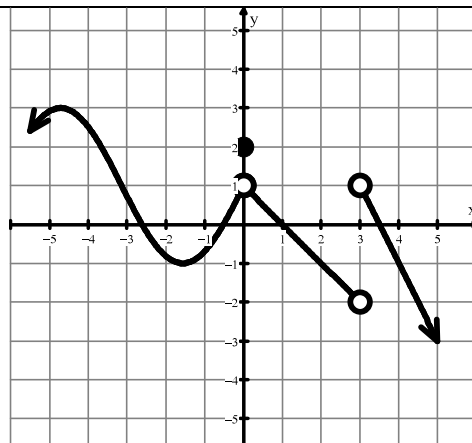
d.  $\lim_{x \rightarrow 3} f(x) = \text{dne}$

e.  $f(0) = 2$

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

g.  $\lim_{x \rightarrow 0^+} f(x) = 1$

h.  $f(1) = 0$



8)

a.  $\lim_{x \rightarrow -1^-} f(x) = 1$

b.  $f(2) = 1$

c.  $\lim_{x \rightarrow 2} f(x) = 4$

d.  $\lim_{x \rightarrow -1} f(x) = 1$

e.  $f(4) = \text{dne}$

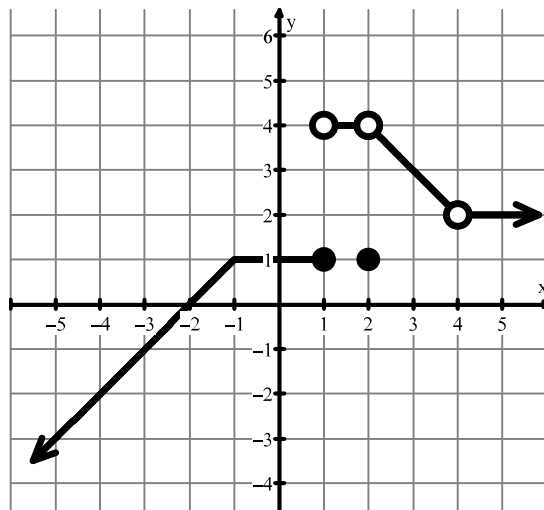
f.  $\lim_{x \rightarrow 1^-} f(x) = 1$

g.  $\lim_{x \rightarrow -1^+} f(x) = 1$

h.  $f(1) = 1$

i.  $\lim_{x \rightarrow 4} f(x) = 2$

j.  $\lim_{x \rightarrow 1} f(x) = \text{dne}$



9)

a.  $\lim_{x \rightarrow 3^-} f(x) = 4$

b.  $f(-1) = \text{dne}$

c.  $\lim_{x \rightarrow 3} f(x) = 4$

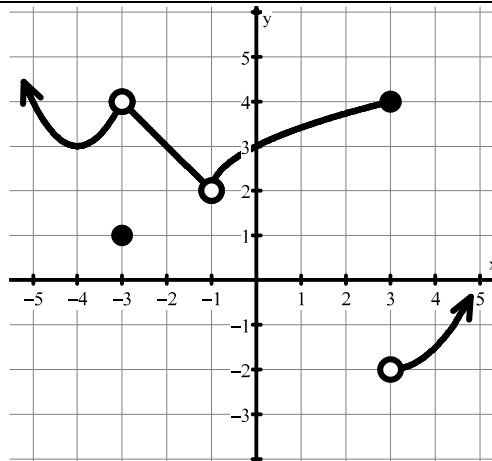
d.  $\lim_{x \rightarrow -1} f(x) = 2$

e.  $f(-3) = 1$

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

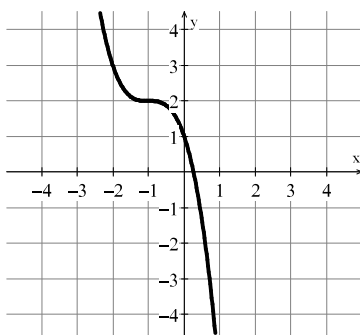
g.  $f(3) = 4$

h.  $\lim_{x \rightarrow 0} f(x) = 3$

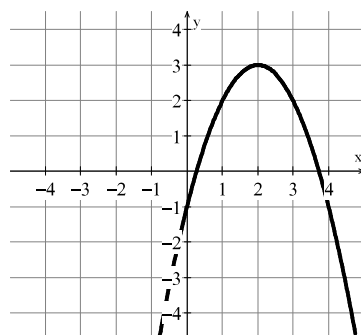


**Skillz Review:** Write the function of each graph using  $f(x) = \sqrt{x}$ ,  $f(x) = x^3$ ,  $f(x) = |x|$ , or  $f(x) = x^2$ .

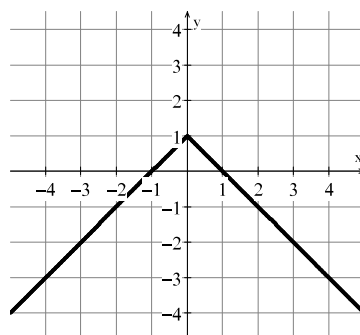
1)  $f(x) = -(x+1)^3 + 2$



2)  $f(x) = -(x-2)^2 + 3$



3)  $f(x) = -|x| + 1$



4)  $f(x) = -\sqrt{x+1} + 2$

