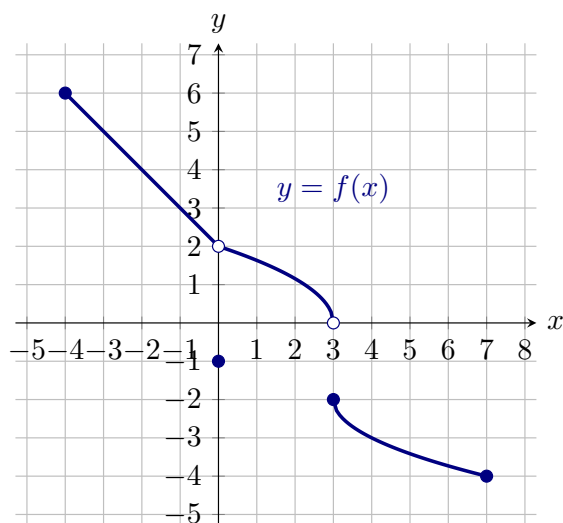


Exercise 1 The entire graph of a function f is given below.



The domain of f is $\boxed{[-4, 7]}$.

The range of f (from bottom to top) is $\boxed{[-4, -2]} \cup \{\boxed{-1}\} \cup \boxed{(0, 2]} \cup \boxed{[2, 6]}$.

Find the following limits, if they exist. If a limit does not exist, explain why.

$$\lim_{x \rightarrow 0} f(x) = \boxed{2}$$

Multiple Choice:

- (a) The limit does exist. ✓
- (b) The limit does not exist because $f(0)$ does not exist.
- (c) The limit does not exist because $f(0)$ is not close to the values of f near 0.
- (d) The limit does not exist because $\lim_{x \rightarrow 0^-} f(x) \neq \lim_{x \rightarrow 0^+} f(x)$.

$$\lim_{x \rightarrow 3^-} f(x) = \boxed{0}$$

Multiple Choice:

- (a) *The limit does exist.* ✓
 - (b) *The limit does not exist because $f(3)$ does not exist.*
 - (c) *The limit does not exist because $f(3)$ is not close to the values of f near 3.*
 - (d) *The limit does not exist because $\lim_{x \rightarrow 3^-} f(x) \neq \lim_{x \rightarrow 3^+} f(x)$.*
-

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

Multiple Choice:

- (a) *The limit does exist.* ✓
 - (b) *The limit does not exist because $f(3)$ does not exist.*
 - (c) *The limit does not exist because $f(3)$ is not close to the values of f near 3.*
 - (d) *The limit does not exist because $\lim_{x \rightarrow 3^-} f(x) \neq \lim_{x \rightarrow 3^+} f(x)$.*
-

$$\lim_{x \rightarrow 3} f(x) = \boxed{DNE}$$

Multiple Choice:

- (a) *The limit does exist.*
- (b) *The limit does not exist because $f(3)$ does not exist.*
- (c) *The limit does not exist because $f(3)$ is not close to the values of f near 3.*
- (d) *The limit does not exist because $\lim_{x \rightarrow 3^-} f(x) \neq \lim_{x \rightarrow 3^+} f(x)$.* ✓

Find the following values.

$$f(0) = \boxed{-1}$$

$$f^{-1}(-2) = \boxed{3}$$
