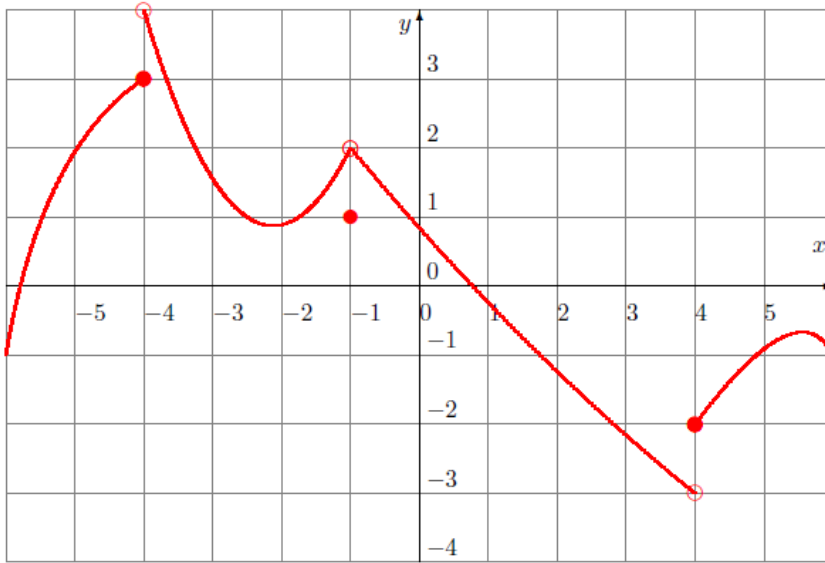


Consider the following function defined by its graph:



Find the following limits:

- a) $\lim_{x \rightarrow -1^-} f(x)$
 b) $\lim_{x \rightarrow -1^+} f(x)$
 c) $\lim_{x \rightarrow -1} f(x)$
 d) $\lim_{x \rightarrow -4} f(x)$
 e) $\lim_{x \rightarrow 4} f(x)$

Answers

a) $\lim_{x \rightarrow -1^-} f(x) = 2$

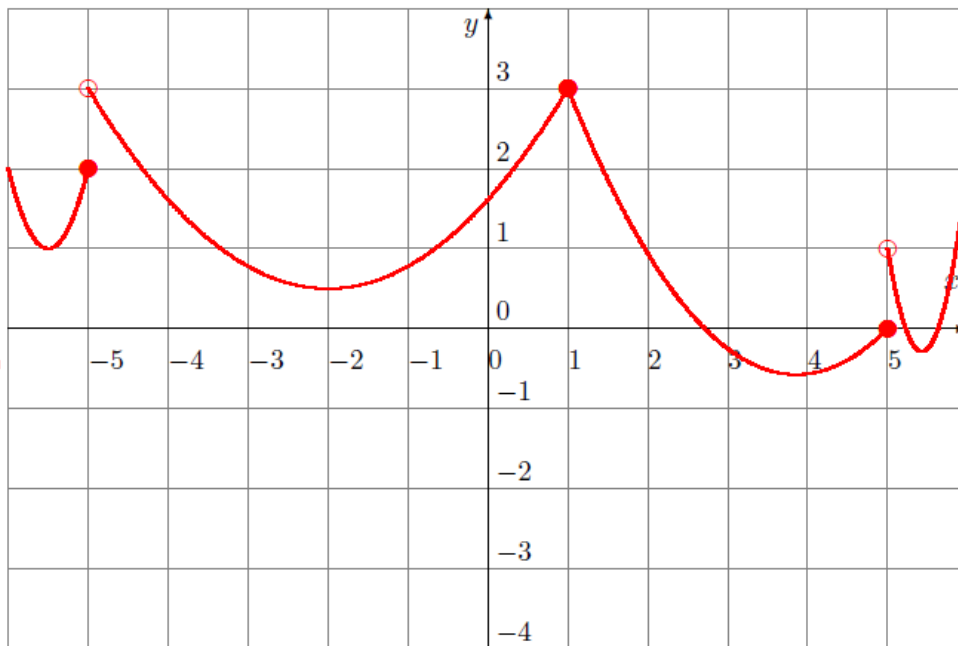
b) $\lim_{x \rightarrow -1^+} f(x) = 2$

c) $\lim_{x \rightarrow -1^-} f(x) = \lim_{x \rightarrow -1^+} f(x)$. Therefore $\lim_{x \rightarrow -1} f(x) = 2$

d) $\lim_{x \rightarrow -4^-} f(x) \neq \lim_{x \rightarrow -4^+} f(x)$. Therefore $\lim_{x \rightarrow -4} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 4^-} f(x) \neq \lim_{x \rightarrow 4^+} f(x)$. Therefore $\lim_{x \rightarrow 4} f(x) = \text{DNE}$

Consider the following function defined by its graph:



Find the following limits:

$a) \lim_{x \rightarrow 1^-} f(x)$
 $b) \lim_{x \rightarrow 1^+} f(x)$
 $c) \lim_{x \rightarrow 1} f(x)$
 $d) \lim_{x \rightarrow -5} f(x)$
 $e) \lim_{x \rightarrow 5} f(x)$

Answers

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

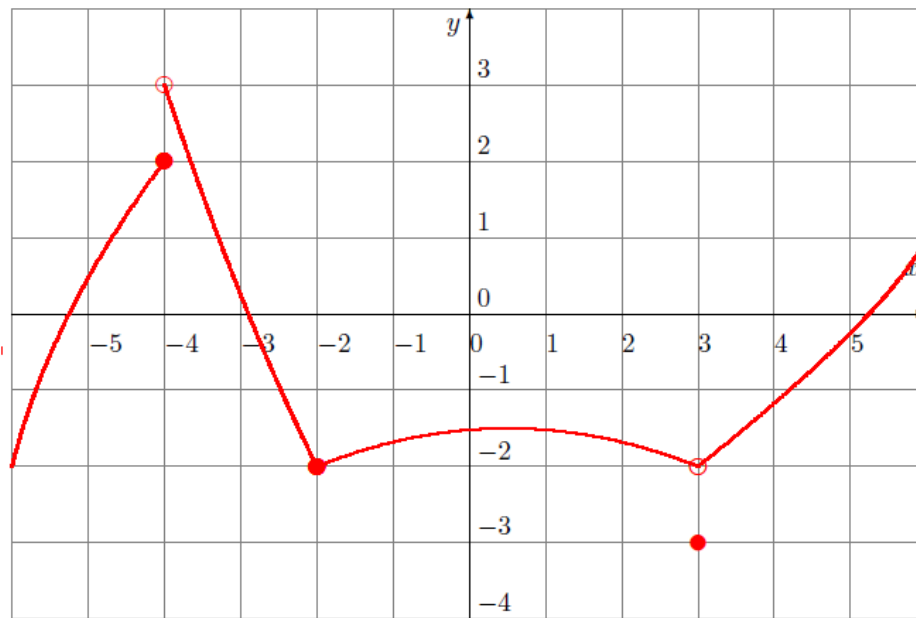
b) $\lim_{x \rightarrow 1^+} f(x) = 3$

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

d) $\lim_{x \rightarrow -5^-} f(x) \neq \lim_{x \rightarrow -5^+} f(x)$. Therefore $\lim_{x \rightarrow -5} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 5^-} f(x) \neq \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = \text{DNE}$

Consider the following function defined by its graph:



Find the following limits:

a) $\lim_{x \rightarrow -2^-} f(x)$

b) $\lim_{x \rightarrow -2^+} f(x)$

c) $\lim_{x \rightarrow -2} f(x)$

d) $\lim_{x \rightarrow -4} f(x)$

e) $\lim_{x \rightarrow 3} f(x)$

Answers

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

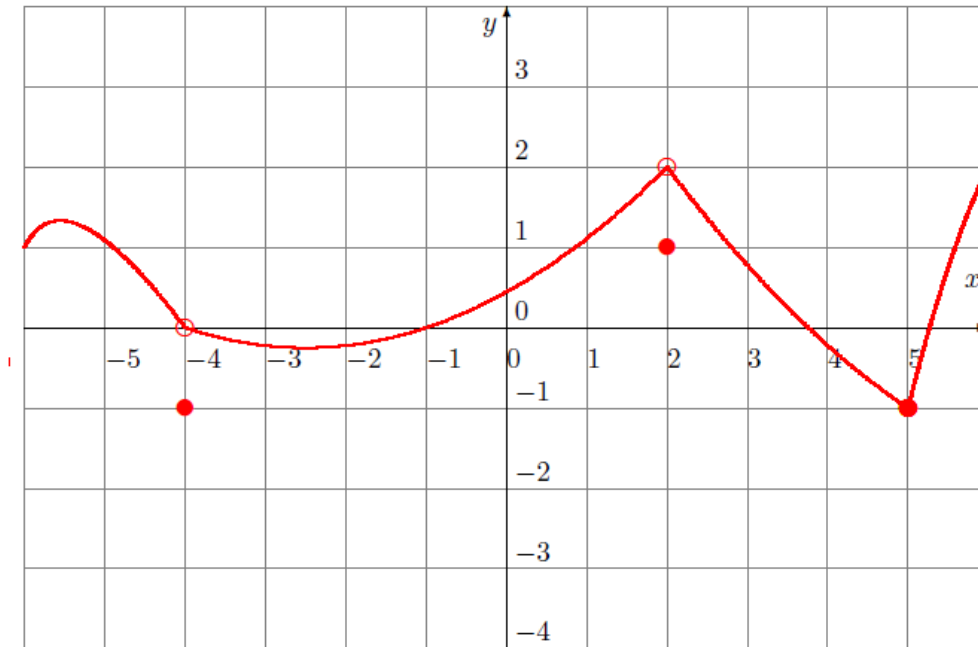
b) $\lim_{x \rightarrow -2^+} f(x) = -2$

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

d) $\lim_{x \rightarrow -4^-} f(x) \neq \lim_{x \rightarrow -4^+} f(x)$. Therefore $\lim_{x \rightarrow -4} f(x) = \text{DNE}$

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

Consider the following function defined by its graph:



Find the following limits:

a) $\lim_{x \rightarrow 2^-} f(x)$ b) $\lim_{x \rightarrow 2^+} f(x)$ c) $\lim_{x \rightarrow 2} f(x)$ d) $\lim_{x \rightarrow -4} f(x)$ e) $\lim_{x \rightarrow 5} f(x)$

Answers

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

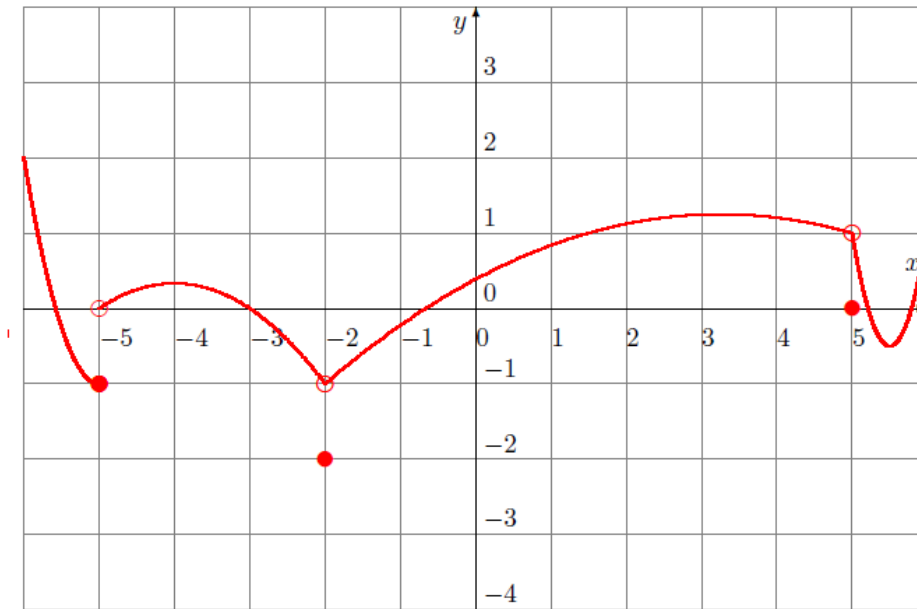
b) $\lim_{x \rightarrow 2^+} f(x) = 2$

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

d) $\lim_{x \rightarrow -4^-} f(x) = \lim_{x \rightarrow -4^+} f(x)$. Therefore $\lim_{x \rightarrow -4} f(x) = 0$

e) $\lim_{x \rightarrow 5^-} f(x) = \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = -1$

Consider the following function defined by its graph:



Find the following limits:

- a) $\lim_{x \rightarrow -2^-} f(x)$
 b) $\lim_{x \rightarrow -2^+} f(x)$
 c) $\lim_{x \rightarrow -2} f(x)$
 d) $\lim_{x \rightarrow -5} f(x)$
 e) $\lim_{x \rightarrow 5} f(x)$

Answers

a) $\lim_{x \rightarrow -2^-} f(x) = -1$

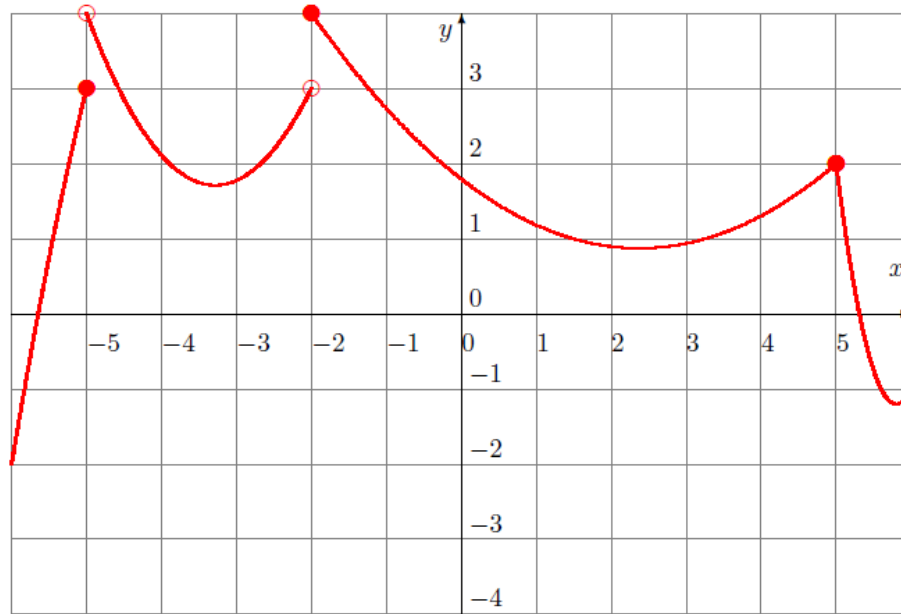
b) $\lim_{x \rightarrow -2^+} f(x) = -1$

c) $\lim_{x \rightarrow -2^-} f(x) = \lim_{x \rightarrow -2^+} f(x)$. Therefore $\lim_{x \rightarrow -2} f(x) = -1$

d) $\lim_{x \rightarrow -5^-} f(x) \neq \lim_{x \rightarrow -5^+} f(x)$. Therefore $\lim_{x \rightarrow -5} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 5^-} f(x) = \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = 1$

Consider the following function defined by its graph:



Find the following limits:

- a) $\lim_{x \rightarrow -2^-} f(x)$ b) $\lim_{x \rightarrow -2^+} f(x)$ c) $\lim_{x \rightarrow -2} f(x)$ d) $\lim_{x \rightarrow -5} f(x)$ e) $\lim_{x \rightarrow 5} f(x)$

Answers

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

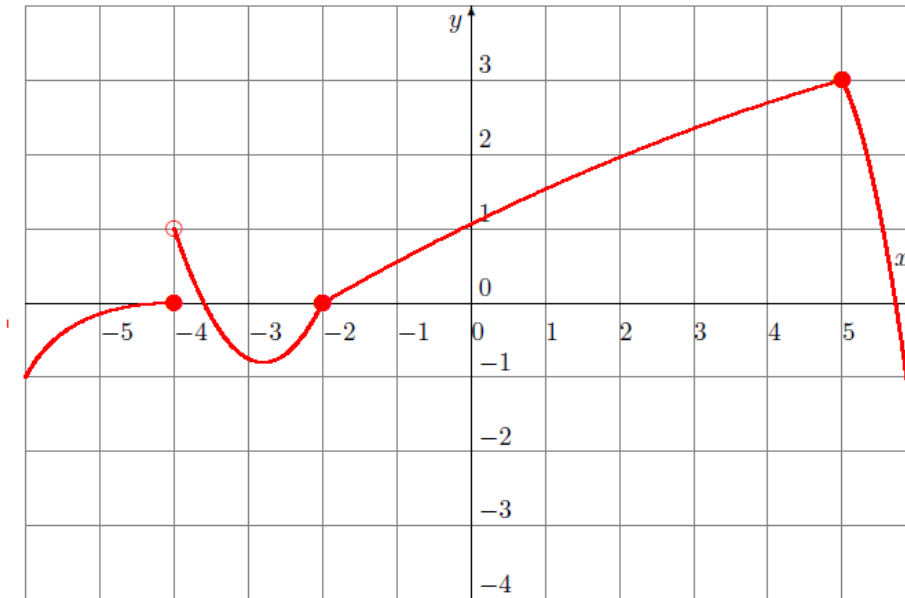
b) $\lim_{x \rightarrow -2^+} f(x) = 4$

c) $\lim_{x \rightarrow -2^-} f(x) \neq \lim_{x \rightarrow -2^+} f(x)$. Therefore $\lim_{x \rightarrow -2} f(x) = \text{DNE}$

d) $\lim_{x \rightarrow -5^-} f(x) \neq \lim_{x \rightarrow -5^+} f(x)$. Therefore $\lim_{x \rightarrow -5} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 5^-} f(x) = \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = 2$

Consider the following function defined by its graph:



Find the following limits:

a) $\lim_{x \rightarrow -2^-} f(x)$ b) $\lim_{x \rightarrow -2^+} f(x)$ c) $\lim_{x \rightarrow -2} f(x)$ d) $\lim_{x \rightarrow -4} f(x)$ e) $\lim_{x \rightarrow 5} f(x)$

Answers

a) $\lim_{x \rightarrow -2^-} f(x) = 0$

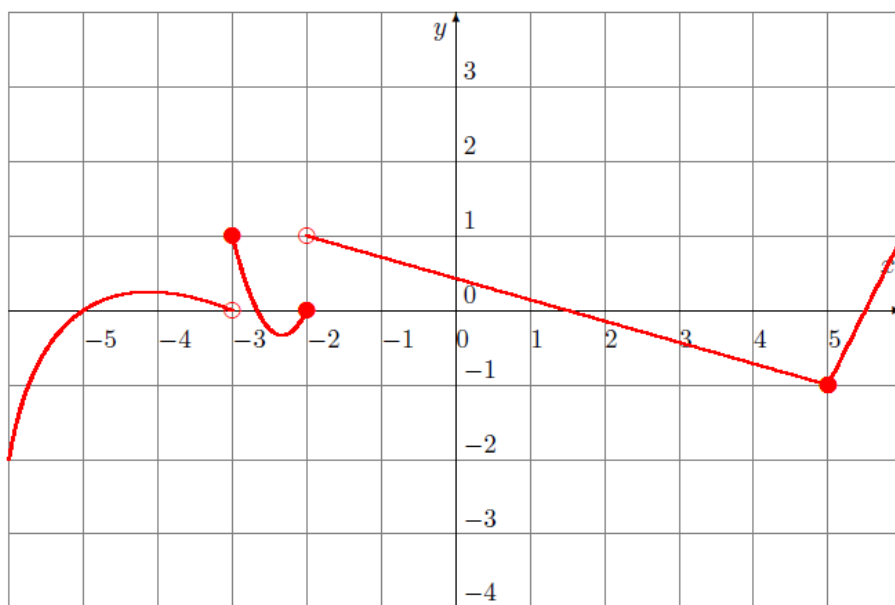
b) $\lim_{x \rightarrow -2^+} f(x) = 0$

c) $\lim_{x \rightarrow -2^-} f(x) = \lim_{x \rightarrow -2^+} f(x)$. Therefore $\lim_{x \rightarrow -2} f(x) = 0$

d) $\lim_{x \rightarrow -4^-} f(x) \neq \lim_{x \rightarrow -4^+} f(x)$. Therefore $\lim_{x \rightarrow -4} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 5^-} f(x) = \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = 3$

Consider the following function defined by its graph:



Find the following limits:

$$a) \lim_{x \rightarrow -2^-} f(x) \quad b) \lim_{x \rightarrow -2^+} f(x) \quad c) \lim_{x \rightarrow -2} f(x) \quad d) \lim_{x \rightarrow -3} f(x) \quad e) \lim_{x \rightarrow 5} f(x)$$

Answers

a) $\lim_{x \rightarrow -2^-} f(x) = 0$

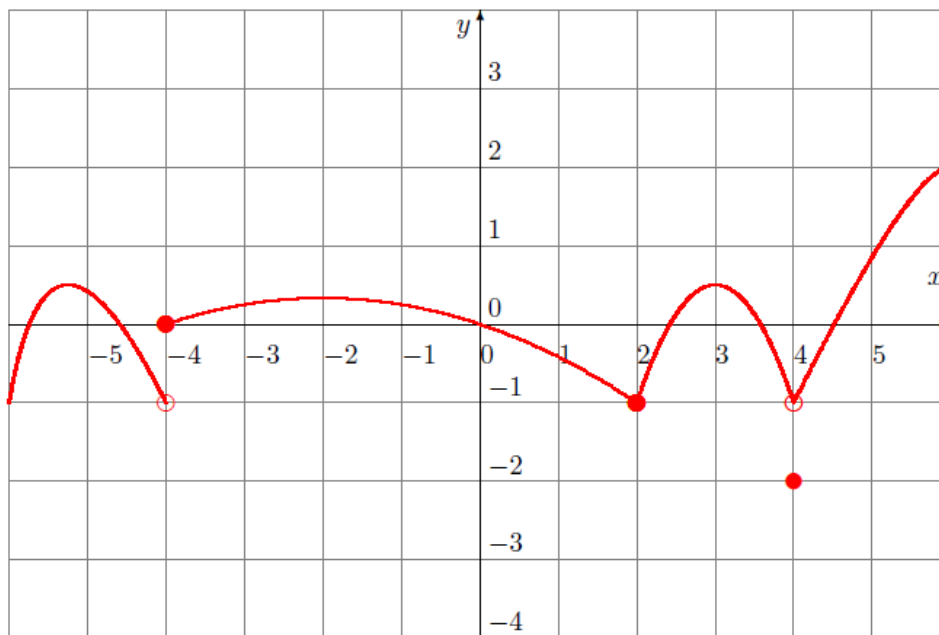
b) $\lim_{x \rightarrow -2^+} f(x) = 1$

c) $\lim_{x \rightarrow -2^-} f(x) \neq \lim_{x \rightarrow -2^+} f(x)$. Therefore $\lim_{x \rightarrow -2} f(x) = \text{DNE}$

d) $\lim_{x \rightarrow -3^-} f(x) \neq \lim_{x \rightarrow -3^+} f(x)$. Therefore $\lim_{x \rightarrow -3} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 5^-} f(x) = \lim_{x \rightarrow 5^+} f(x)$. Therefore $\lim_{x \rightarrow 5} f(x) = -1$

Consider the following function defined by its graph:



Find the following limits:

a) $\lim_{x \rightarrow 2^-} f(x)$

b) $\lim_{x \rightarrow 2^+} f(x)$

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

d) $\lim_{x \rightarrow -4} f(x)$

e) $\lim_{x \rightarrow 4} f(x)$

Answers

a) $\lim_{x \rightarrow 2^-} f(x) = -1$

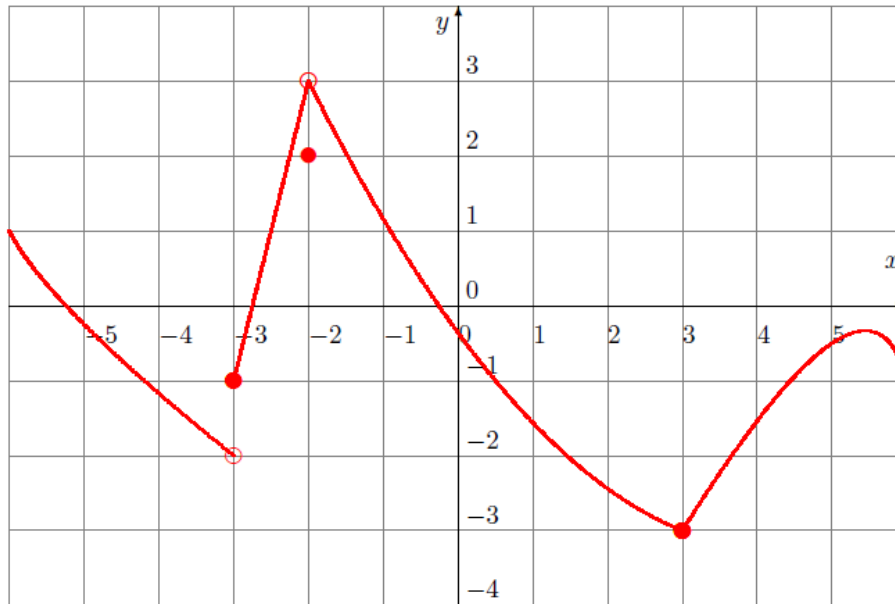
b) $\lim_{x \rightarrow 2^+} f(x) = -1$

c) $\lim_{x \rightarrow 2^-} f(x) = \lim_{x \rightarrow 2^+} f(x)$. Therefore $\lim_{x \rightarrow 2} f(x) = -1$

d) $\lim_{x \rightarrow -4^-} f(x) \neq \lim_{x \rightarrow -4^+} f(x)$. Therefore $\lim_{x \rightarrow -4} f(x) = \text{DNE}$

e) $\lim_{x \rightarrow 4^-} f(x) = \lim_{x \rightarrow 4^+} f(x)$. Therefore $\lim_{x \rightarrow 4} f(x) = -1$

Consider the following function defined by its graph:



Find the following limits:

a) $\lim_{x \rightarrow -2^-} f(x)$ b) $\lim_{x \rightarrow -2^+} f(x)$ c) $\lim_{x \rightarrow -2} f(x)$ d) $\lim_{x \rightarrow -3} f(x)$ e) $\lim_{x \rightarrow 3} f(x)$

Answers

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

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

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

d) $\lim_{x \rightarrow -3^-} f(x) \neq \lim_{x \rightarrow -3^+} f(x)$. Therefore $\lim_{x \rightarrow -3} f(x) = \text{DNE}$

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