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25. The graph suggests that, as x approaches c from the left,

$$\lim_{x \to c^-} f(x) = -1,$$

while, as x approaches c from the right,

$$\lim_{x \to c^+} f(x) = 1.$$

$\boxed{\text{Because the two one-sided limits are not equal}}$ (that is, there is no single number that the values of f approach when x is close to c), it follows that

$$\lim_{x \to c} f(x) \ \boxed{\text{does not exist}}.$$

27. The graph suggests that, as x approaches c from the left,

$$\lim_{x \to c^-} f(x) = 2,$$

while, as x approaches c from the right,

$$\lim_{x \to c^+} f(x) = 1.$$

$\boxed{\text{Because the two one-sided limits are not equal}}$ (that is, there is no single number that the values of f approach when x is close to c), it follows that

$$\lim_{x \to c} f(x) \ \boxed{\text{does not exist}}.$$

29. The graph of f shown below suggests that, as x approaches 2 from the left,

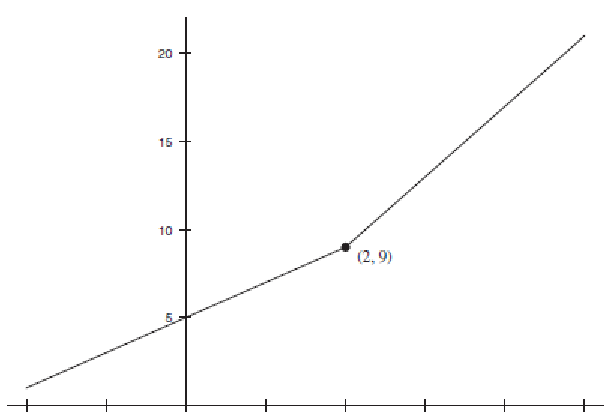
$$\lim_{x \to 2^-} f(x) = 9,$$

while, as x approaches 2 from the right,

$$\lim_{x \to 2+} f(x) = 9.$$

Because the two one-sided limits are equal, it follows that

$$\lim_{x \to 2} f(x) = \boxed{9}.$$



31. The graph of f shown below suggests that, as x approaches 1 from the left,

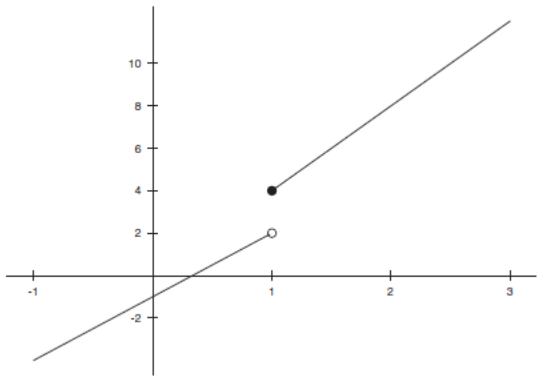
$$\lim_{x \to 1^-} f(x) = 2,$$

while, as x approaches 1 from the right,

$$\lim_{x \to 1^+} f(x) = 4.$$

Because the two one-sided limits are not equal, it follows that

$$\lim_{x \to 1} f(x) \ \boxed{\text{does not exist}}.$$



33. The graph of f shown below suggests that, as x approaches 1 from the left,

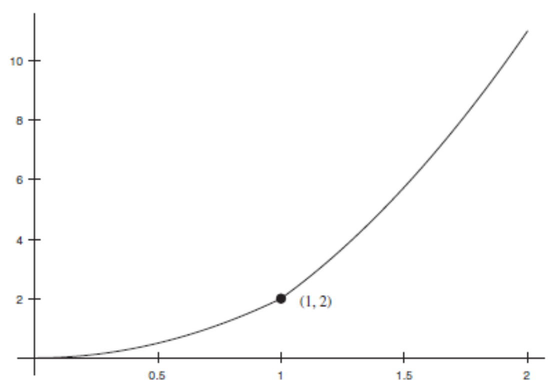
$$\lim_{x \to 1^-} f(x) = 2,$$

while, as x approaches 1 from the right,

$$\lim_{x \to 1^+} f(x) = 2.$$

Because the two one-sided limits are equal, it follows that

$$\lim_{x \to 1} f(x) = \boxed{2}.$$



35. The graph of f shown below suggests that, as x approaches 0 from the left,

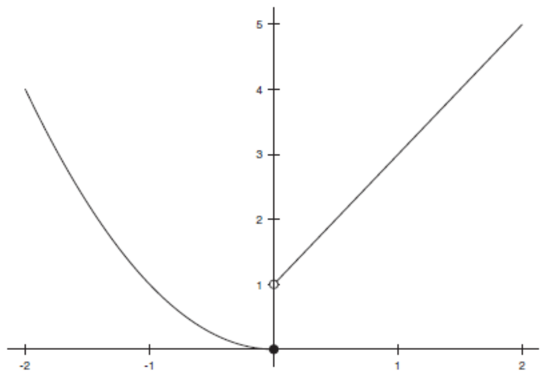
$$\lim_{x\to 0^-} f(x) = 0,$$

while, as x approaches 0 from the right,

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

Because the two one-sided limits are not equal, it follows that

$$\lim_{x\to 0} f(x) \ \boxed{\text{does not exist}}.$$



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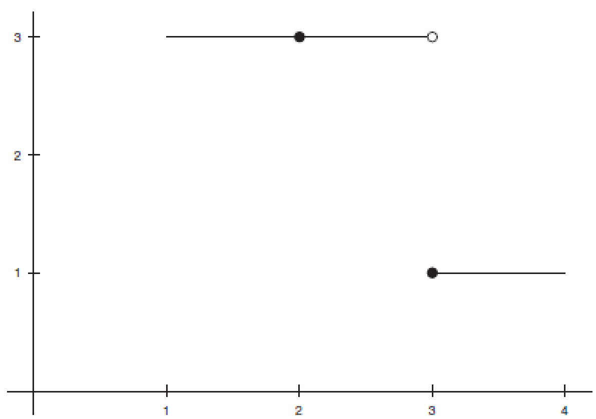
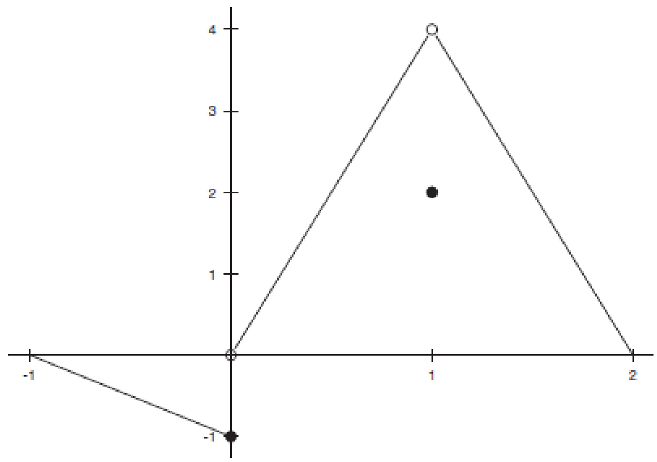
37. Answers will vary. Below is the graph of a function f for which

$$\lim_{x\to 2} f(x) = 3; \quad \lim_{x\to 3^-} f(x) = 3; \quad \lim_{x\to 3^+} f(x) = 1; \quad f(2) = 3; \quad f(3) = 1.$$



39. Answers will vary. Below is the graph of a function f for which

$$\lim_{x\to 1} f(x) = 4; \quad \lim_{x\to 0^-} f(x) = -1; \quad \lim_{x\to 0^+} f(x) = 0; \quad f(0) = -1; \quad f(1) = 2.$$



41. The table of values below suggests $\lim_{x\to 5^+} \frac{|x-5|}{x-5} = \boxed{1}$.

x	$5 \leftarrow$	5.001	5.01	5.1
$f(x) = \frac{\|x-5\|}{x-5}$	$f(x)$ approaches 1	1	1	1

Alternately, the graph below suggests $\lim_{x\to 5^+} \frac{|x-5|}{x-5} = \boxed{1}$.