MVE045 W2-RÖ1

gränsvärden

ADAMS Problem 1.2:1

1. Find: (a) $\lim_{x \to -1} f(x)$, (b) $\lim_{x \to 0} f(x)$, and (c) $\lim_{x \to 1} f(x)$, for the function f whose graph is shown in Figure 1.13.

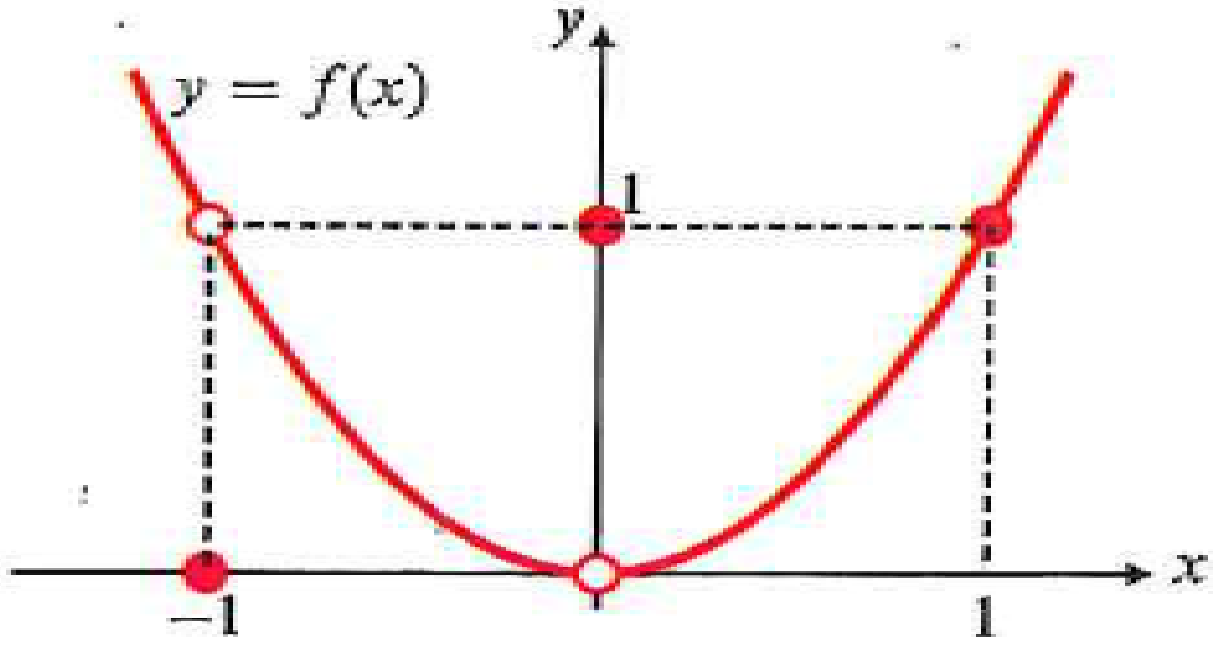


Figure 1.13

ADAMS Problem 1.2: 7, 17, 25, 21

Evaluate the limit or explain why it does not exist

7. $\lim_{x \to 4} (x^2 - 4x + 1)$

17. $\lim_{x \to 9} \dfrac{\sqrt{x} - 3}{x - 9}$

21. $\lim_{x \to 0} \dfrac{|x - 2|}{x - 2}$

25. $\lim_{t \to 0} \dfrac{t}{\sqrt{4 + t} - \sqrt{4 - t}}$

Type of limit	Exists (yes/no)	Limit value
?	?	?
?	?	?
?	?	?
?	?	?

ADAMS Problem 1.2: 49, 59

In Exercises 49-60 find the indicated one-sided limit or explain why it does not exist

49. $\lim_{x \to 2-} \sqrt{2 - x}$

59. $\lim_{x \to 2-} \dfrac{x^2 - 4}{|x + 2|}$

56. $\lim_{x \to 0+} \sqrt{x^2 - x^4}$ vad händer här?

ADAMS Problem 1.2:65

65. Suppose $\lim_{x \to 4} f(x) = 2$ and $\lim_{x \to 4} g(x) = -3$. Find:

(a) $\lim_{x \to 4} \Big(g(x) + 3 \Big)$

(b) $\lim_{x \to 4} x f(x)$

ADAMS Problem 1.3:1,3,5

Find the limits in Exercises 1-10

1. $\lim_{x \to \infty} \dfrac{x}{2x - 3}$

3. $\lim_{x \to \infty} \dfrac{3x^3 - 5x^2 + 7}{8 + 2x - 5x^3}$

5. $\lim_{x \to -\infty} \dfrac{x^2 + 3}{x^3 + 2}$

ADAMS Problem 1.3:27,29

In Exercises 11-32 evaluate the indicated limit. If it does not exist, is the limit $+\infty$, $-\infty$, or neither?

27. $\lim_{x\to\infty} \dfrac{x\sqrt{x+1}\,(1-\sqrt{2x+3})}{7-6x+4x^2}$

29. $\lim_{x\to-\infty} \left(\sqrt{x^2+2x}-\sqrt{x^2-2x}\right)$

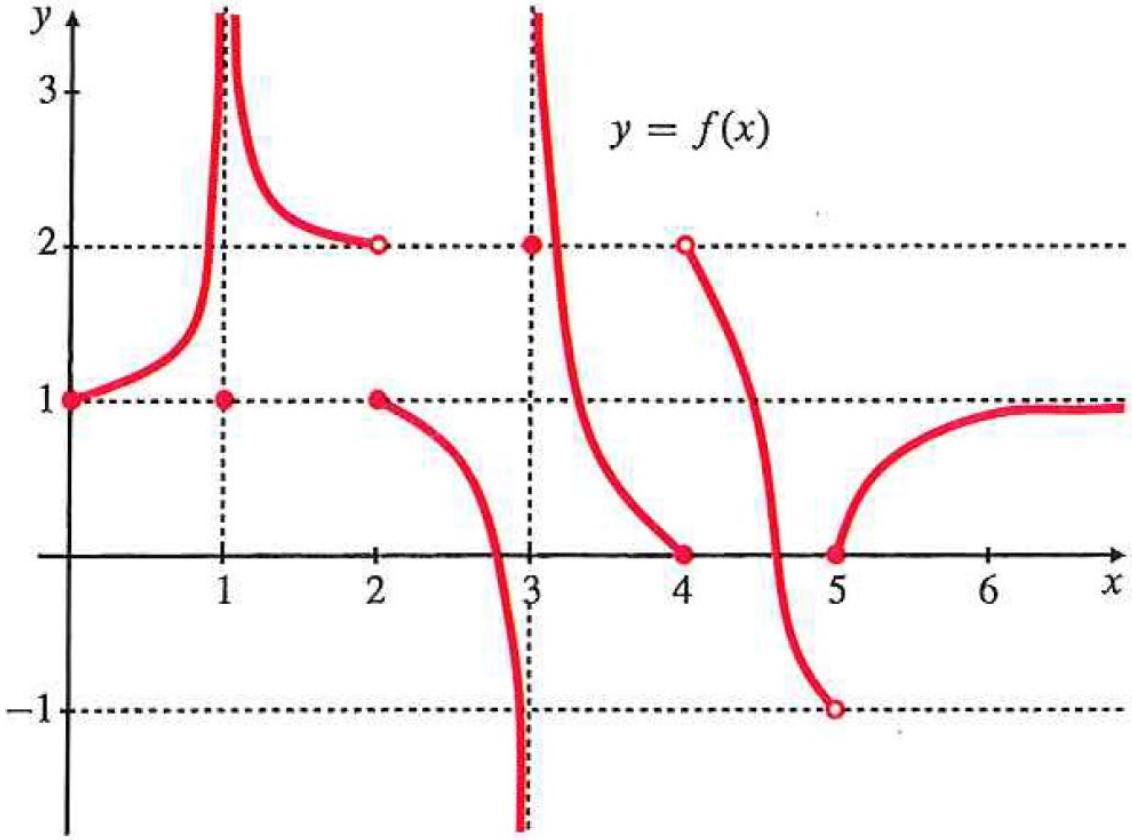
ADAMS Problem 1.3:33

33. What are the horizontal asymptotes of $y = \dfrac{1}{\sqrt{x^2 - 2x} - x}$?

What are its vertical asymptotes?

ADAMS Problem 1.3: 35-45

The function whose graph is shown in the figure has domain $[0, \infty)$. Find the limits of *f* indicated below:



35. $\lim_{x \to 0+} f(x)$

36. $\lim_{x \to 1} f(x)$

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

38. $\lim_{x \to 2-} f(x)$

39. $\lim_{x \to 3-} f(x)$

40. $\lim_{x \to 3+} f(x)$

41. $\lim_{x \to 4+} f(x)$

42. $\lim_{x \to 4-} f(x)$

43. $\lim_{x \to 5-} f(x)$

44. $\lim_{x \to 5+} f(x)$

45. $\lim_{x \to \infty} f(x)$