Answer on Question #77619 – Math – Calculus

Question

Sketch the graph of a single function f that satisfies all of the following conditions:

i) lim f(x)=-2 as x approaches neg infinity

ii) lim f(x) = 0 as x approaches infinity

iii) lim f(x) = infinity as x approaches -3 from the right

iv) lim f(x)= neg infinity as x approaches -3 from the left

v) lim f(X) = -2 as x approaches 3 from the right

vi) f is continuous from the right at 3

Solution

$$f(x) = \begin{cases} -\dfrac{6}{x}, & x \geq 3 \\[2mm] \dfrac{3}{x+3}, & -3 < x < 3 \\[2mm] \dfrac{1}{x+3} - 2, & x < -3 \end{cases}$$