King Fahd University of Petroleum and Minerals
Departement of Mathematics & Statistics
Math101.15
Semester 101
Quiz (1)

Name:
ID #: **Serial #:**

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1. (a) Sketch the graph of a function f that satisfies the following conditions:

[2 points]

$\lim_{x\to 0} f(x) = \infty$

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

$\lim_{x\to 4^+} f(x) = 3$

f is undefined at $x = 4$

$\lim_{x\to 2^+} f(x) = -\infty$

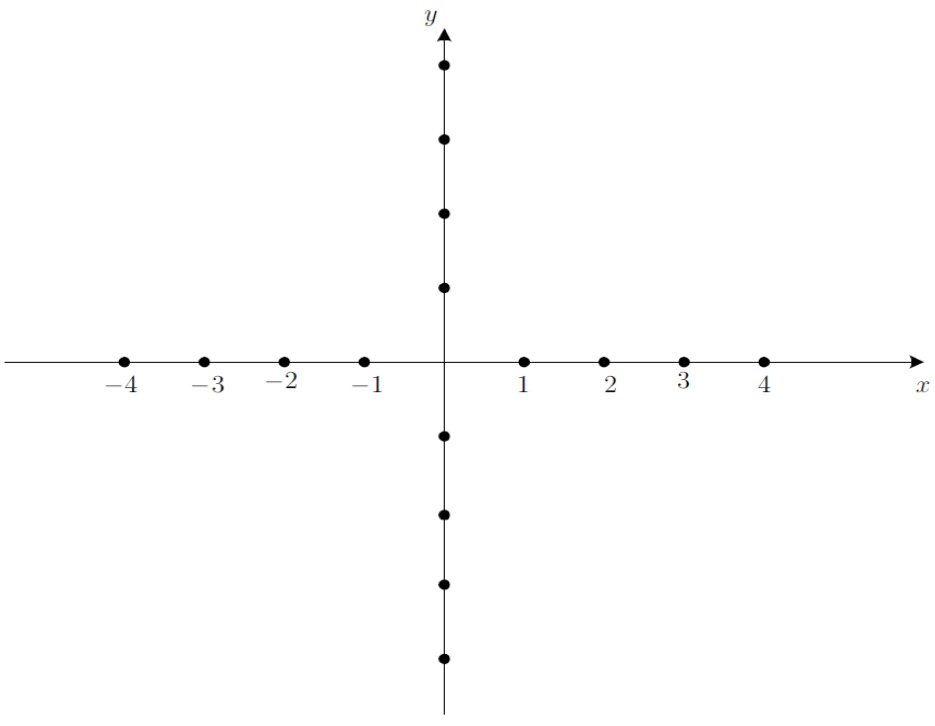
$\lim_{x\to 2^-} f(x) = \infty$

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

$f(-1) = 3$

(b) State the equations of the vertical asymptotes. Explain.

[2 points]



2. Evaluate the following limits, if the limit does not exist explain why:

a) $\lim_{x\to 2^-} \dfrac{|x^2+x-6|}{x^2-x-2}$ [1 point]

b) $\lim_{x\to \frac{1}{2}} \left(x-[\![2x]\!]\right)$, where $[\![\ ]\!]$ denotes the greatest integer function.

[1 point]

c) $\lim_{x\to 0^+} \left(\sqrt{x}\, e^{\sin(\frac{\pi}{\sqrt{x}})}+1\right)$ [1 point]

d) $\lim_{x\to 1} \dfrac{x^3-1}{\sqrt{2x+2}-2}$ [1 point]

Good luck,
Khaled Al-Anezy