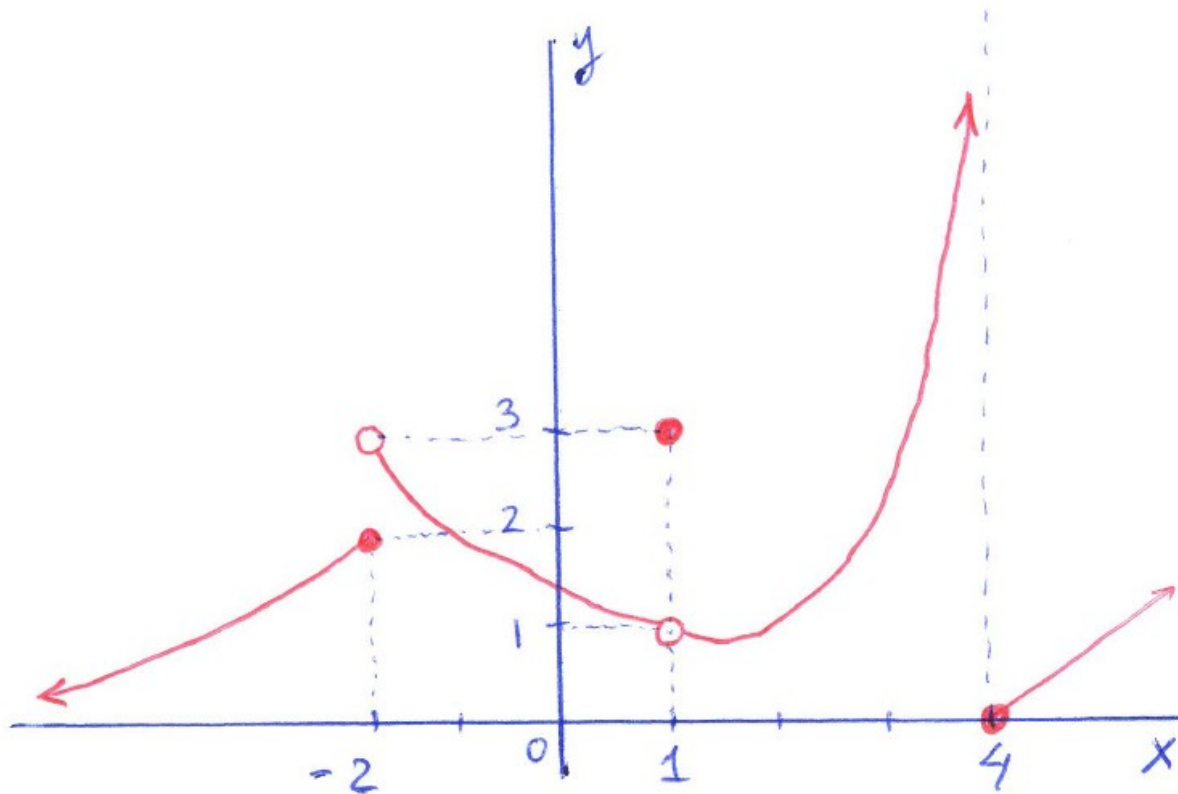Continuity

2.4.1

Is the function on the graph below continuous / right continuous / left continuous
/ discontinuous (which type of discontinuity) at the points $x = -2, 1, 4$?

2.4.2

(a) Is $f(x) = \begin{cases} \cos x & x > 0 \\ -x^2 + 1 & x \leq 0 \end{cases}$ continuous at $x = 0$?

(b) Find the value(s) of k if $f(x) = \begin{cases} kx + 2 & x \geq -1 \\ k^2 x^2 & x < -1 \end{cases}$ is continuous for all x.