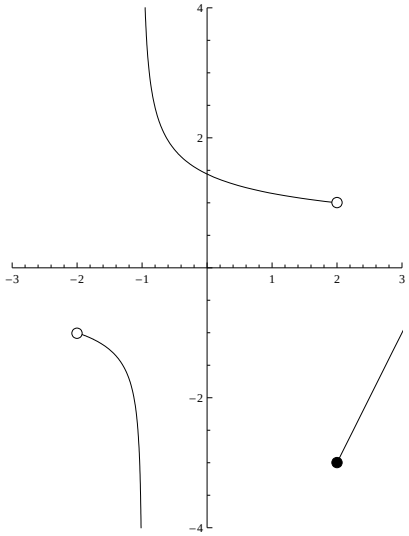
1. **(8 points)**

   (a) **(4 points)** Using epsilon-delta methods, prove that $\lim_{x\to 3} \frac{2x^2-5x-3}{x-3} = 7$.

   (b) **(4 points)** Write the formal mathematical definition of $\lim_{x\to a^-} f(x) = \infty$.

2. **(8 points)** For the plot of $f(x)$ shown below, evaluate the given quantities, or, if they cannot be evaluated, explain why.



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

$f(-2)$

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

$f(2)$

3. **(8 points)** Evaluate the following limits, or explicitly state that they do not exist and explain why they cannot be evaluated.

   (a) **(2 points)** $\lim_{x\to 1} \frac{(2x^2-6x+4)}{5x-5}$

   (b) **(2 points)** $\lim_{s\to 3} \frac{s^2(s-2)}{\sqrt{s}}$

   (c) **(2 points)** $\lim_{u\to 0} \frac{u^3+2u^2-u+10}{3u^2-4u}$

   (d) **(2 points)** $\lim_{t\to 2} \sqrt{4-t^2}$

4. **(2 point bonus)** Prove that there are infinitely many solutions to $\tan x = x^2$.