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1. (5%, 15%) (a) What is the "Intermediate Value Theorem for Continuous Functions"? (b) Use the Intermediate value Theorem to prove that the equation $x^2+\sqrt{2x+5}-4=0$ has a solution.
2. (10%, 10%) (a) What is the definition of the derivative of a function f at a point x? (b) What is the meaning of the function f is differentiable at x?
3. (20%, 20%) Find the asymptotes of the graph of $f(x)$: (a) $f(x)=\dfrac{1-x^2}{x^2+1}$. (b)$f(x)=\dfrac{x^2-4}{x-1}$.
4. (20%) Show that the function $y=|x|$ is differentiable on $(-\infty,0)$ and $(0,\infty)$ but has no derivative at $x=0$.

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