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An Extension of the Darboux Property and Some Typical Properties of Baire-1 Functions

We denote by $\mathcal{A}$, Δ, $\mathcal{DB}^1$, $\mathcal{B}^1$ the set of approximately continuous functions, derivatives, Darboux Baire 1 functions and Baire 1 functions all defined on $[0,1]$. We state our results for the corresponding bounded classes $b\mathcal{A}$, $b\Delta$, $b\mathcal{DB}^1$, $b\mathcal{B}^1$; all these form Banach spaces with the norm $\|f\| = \sup|f|$ and a typical property is understood as such that holds for a residual subset in one of these spaces. The results we list here were proved in [1], [2], [3]. In the chart below we deal with the range R_f, the set A_f of points of approximate continuity, the set C_f of continuity points, the level sets $f^{-1}(y)$ the "reduced" ranges $f(A_f)$, $f(C_f)$ and "cl" stands for closure. μ denotes arbitrary finite Borel measure on $[0,1]$, μ_c is continuous Borel measure and λ denotes Lebesgue's measure.

For instance, assertion 53 is to be read as follows: for any given finite Borel measure μ the functions $f \in b\mathcal{DB}^1$ satisfying $\mu(\mathrm{cl}\ f(C_f)) = 0$ form a residual subset in $b\mathcal{DB}^1$.