> **Info**
>
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> is written (completely with human hands) by Rupadarshi Ray,
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Equations for functions on $\mathbb{R}^2$

> **Definition. Definition**
>
> An equation (PDE) for unkown
>
> $$u : U \subseteq \mathbb{R}^2 \to \mathbb{R} \text{ or } \mathbb{C}$$
>
> is a function
>
> $$F : U \times \mathbb{R}^N \to \mathbb{R} \text{ or } \mathbb{C}$$
>
> for which u is a solution if
>
> $$F(x, y, u, \mathfrak{D}u, \ldots, \mathfrak{D}^\alpha u) = 0$$
>
> for all $(x, y) \in U$.

degree		homog	non-homog
1	linear	$a(x,y)u_x + b(x,y)u_y =$	$a(x,y)u_x + b(x,y)u_y =$
	semi-linear	$a(x,y)u_x + b(x,y)u_y =$	$a(x,y)u_x + b(x,y)u_y =$
	quasi-linear	$a(x,y,u(x,y))u_x + b($	$a(x,y,u(x,y))u_x + b($
	general (non-linear)		
2	semi-linear	$au_{xx} + 2bu_{xy} + cu_{yy} =$ (linear)	$au_{xx} + 2bu_{xy} + cu_{yy} =$
	semi-linear, elliptic		$ac - b^2 > 0$
	semi-linear, hyperbolic		$ac - b^2 < 0$
	semi-linear, parabolic		$ac - b^2 = 0$
	general (non-linear)		
≥ 3			
fractional			

Current note has 0 direct children and 0 total descendants.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - equations
      - 2 Equations for functions on $\mathbb{R}^2$

And it has 3 siblings.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - equations
      - 2 Equations for functions on $\mathbb{R}^2$
      - 2 1 ql Quasi-linear PDEs on $\mathbb{R}^2$
      - n 1 First order PDEs in $\mathbb{R}^n$