Abel prize 2023

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In news- Luis Caffarelli, 74, has won the 2023 Abel Prize for his seminal contributions to regularity theory for nonlinear partial differential equations including free-boundary problems and the Monge-Ampère equation.

About the prize-

- First awarded in 2003, the **Abel prize "recognises pioneering scientific achievements in mathematics".**
- It is **named after Norwegian mathematician Niels Henrik Abel** (1802-29), who in his short life made pioneering contributions in a multitude of fields.
- It is often considered to be an **equivalent of the Nobel prize** which does not have a category for mathematics and has been modelled as such.
- **The prize was established by the Norwegian Parliament (Stortinget) in 2002,** marking the 200th anniversary of Niels Henrick Abel's birth.
- The Abel Prize is **awarded and administered by the Norwegian Academy of Science and Letters on behalf of the Norwegian government**.
- It is **financed by the Norwegian government** which also does not tax the prize money.
- The recipients are chosen by the **Abel Committee, which comprises expert mathematicians**, all appointed by the Norwegian Academy of Science and Letters, under the advice of the **International Mathematical Union (IMU) and the European Mathematical Society (EMS).**
- **The prize includes a monetary award of 7.5 million kroner** (roughly $ 720,000) and a glass plaque designed by Norwegian artist Henrik Haugan.

Luis Caffarelli & his contributions-

- Caffarelli was born and raised in Buenos Aires, Argentina, making him the **first Abel laureate from South**

America.

- Currently, he is a professor at the University of Texas, Austin. He is married to fellow Argentinian mathematician Irene Martínez Gamba, who teaches at UT, Austin as well.
- Cafarelli has been one of the **leading figures in the study of partial differential equations** for over five decades.
- **Partial differential equations arise naturally as laws of nature**, whether to describe the flow of water or the growth of populations. **These equations have been a constant source of intense study** since the days of Newton and Leibniz.
- Caffarelli has made "groundbreaking contributions" that have "radically changed our understanding of classes of nonlinear partial differential equations with wide applications.
- The results are technically virtuous, covering many different areas of mathematics and its applications.
- Notably, he has been recognised for c**ombining brilliant geometric insight with ingenious analytical tools** and methods in this field of mathematics.

Who was Niels Henrick Abel?

- Niels Henrik Abel (1802-1829) was a **Norwegian mathematician** who left a big impact on a number of fields in his rather short life.
- His most **famous single result is the first complete proof demonstrating the impossibility of solving the general quintic equation in radicals.** This question was one of the outstanding open problems of his day, and had been unresolved for over 250 years.
- He was also an i**nnovator in the field of elliptic functions**, discoverer of what would later be known as **Abelian functions**.
- He made all his discoveries while living in crippling

poverty. He died of tuberculosis at the age of 26.