Regioni di assoluta stabilità di due metodi di Predizione e Correzione

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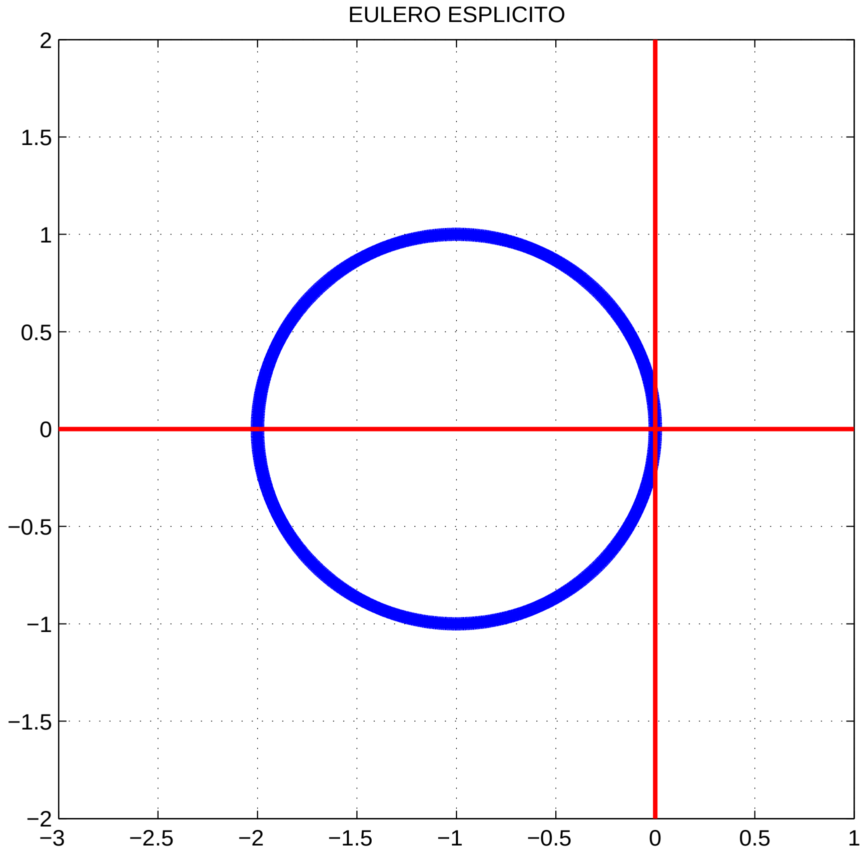
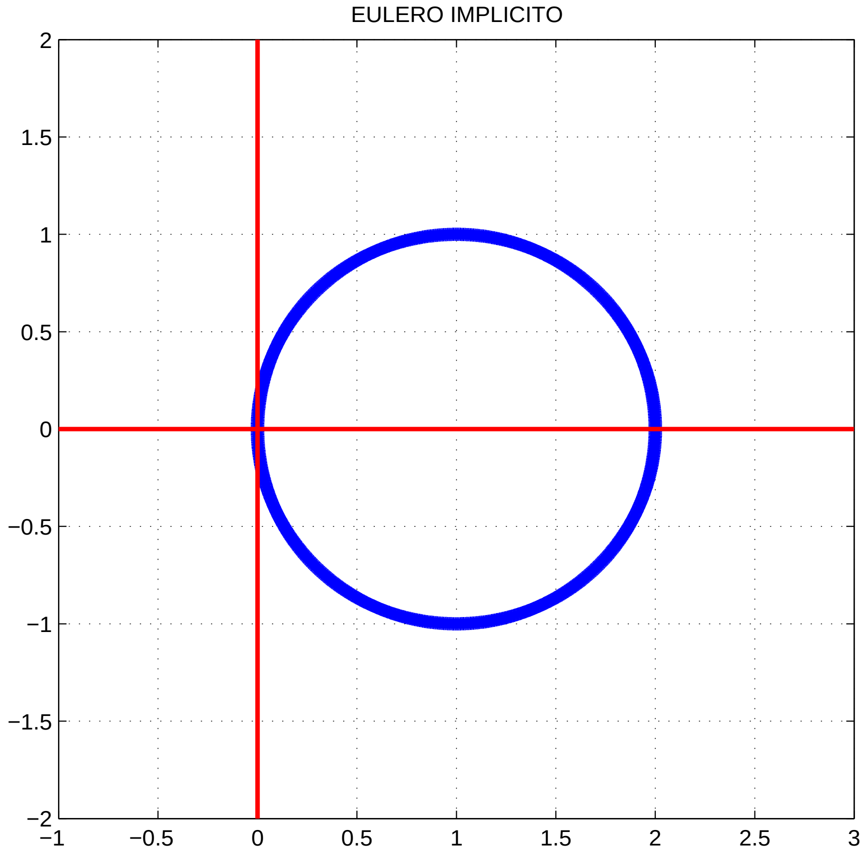
Metodo di Eulero Esplicito

- $y_{n+1} = y_n + hf(t_n, y_n)$
- $\pi(q, \mu) = \mu - 1 - q$
- *Boundary Locus*



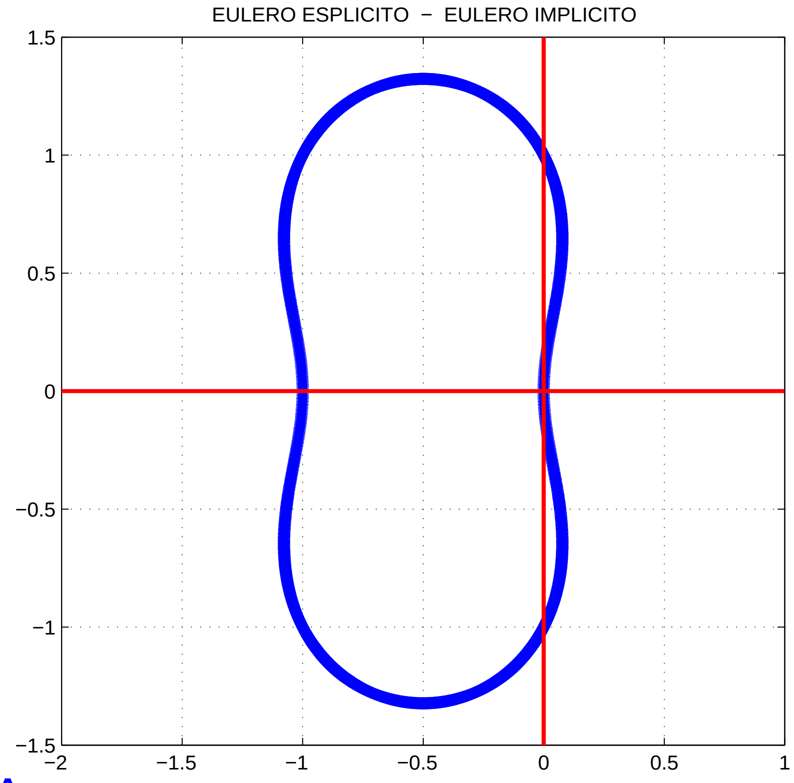
Metodo di Eulero Implicito

- $y_{n+1} = y_n + hf(t_{n+1}, y_{n+1})$
- $\pi(q, \mu) = (1 - q)\mu - 1$
- *Boundary Locus*

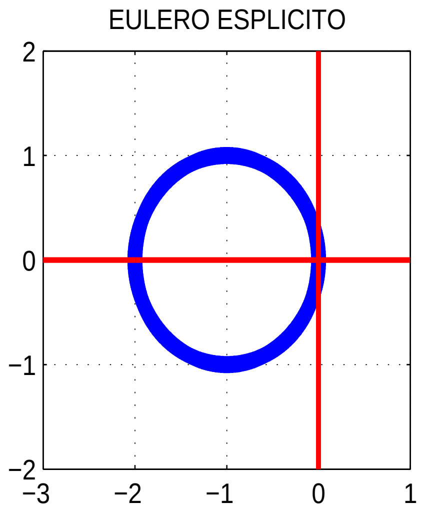


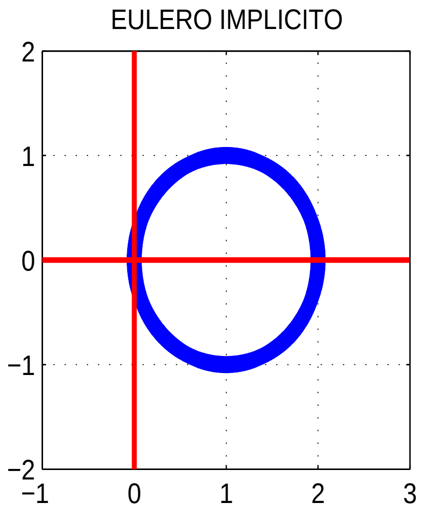
Eulero Esplicito - Eulero Implicito

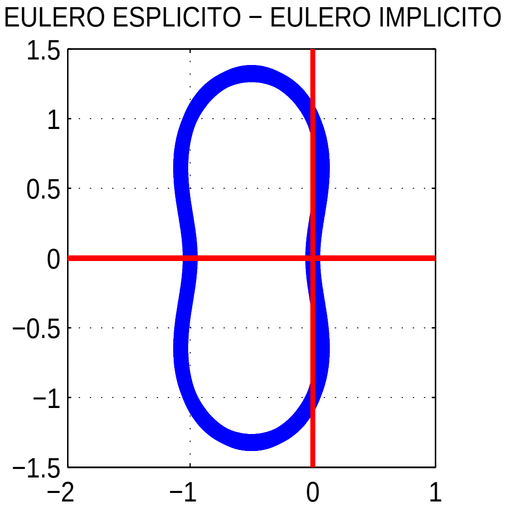
- Preditttore: $y^*_{n+1} = y_n + hf(t_n, y_n)$
- Correttore: $y_{n+1} = y_n + hf(t_{n+1}, y^*_{n+1})$
- $\pi(q, \mu) = \mu - 1 - q - q^2$
- *Boundary Locus*



Eulero Esplicito - Eulero Implicito

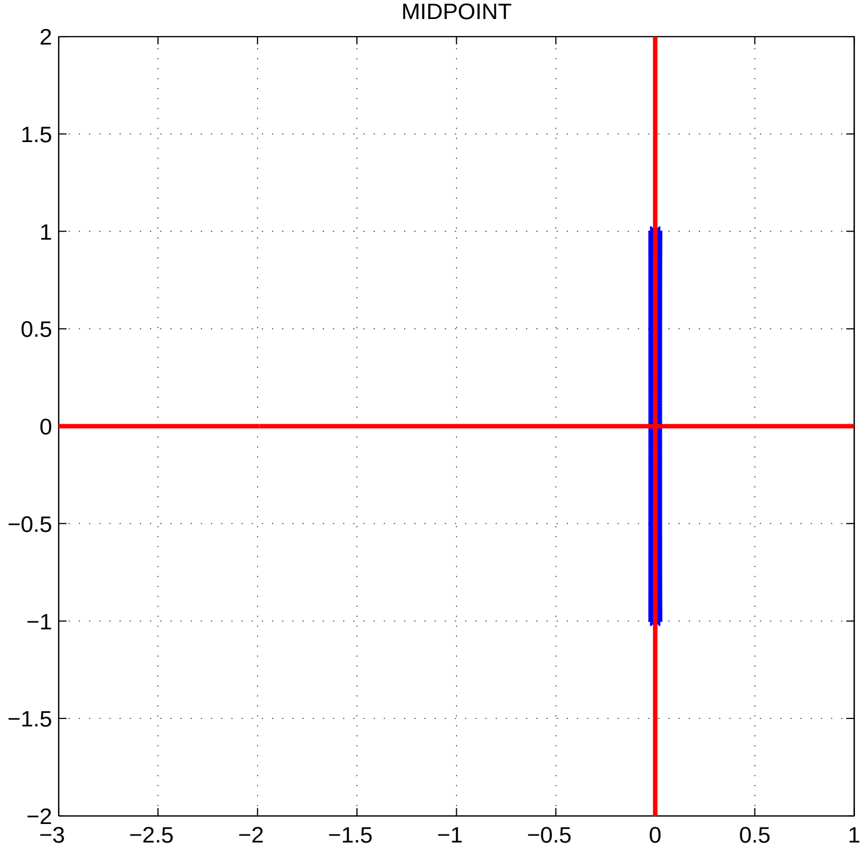






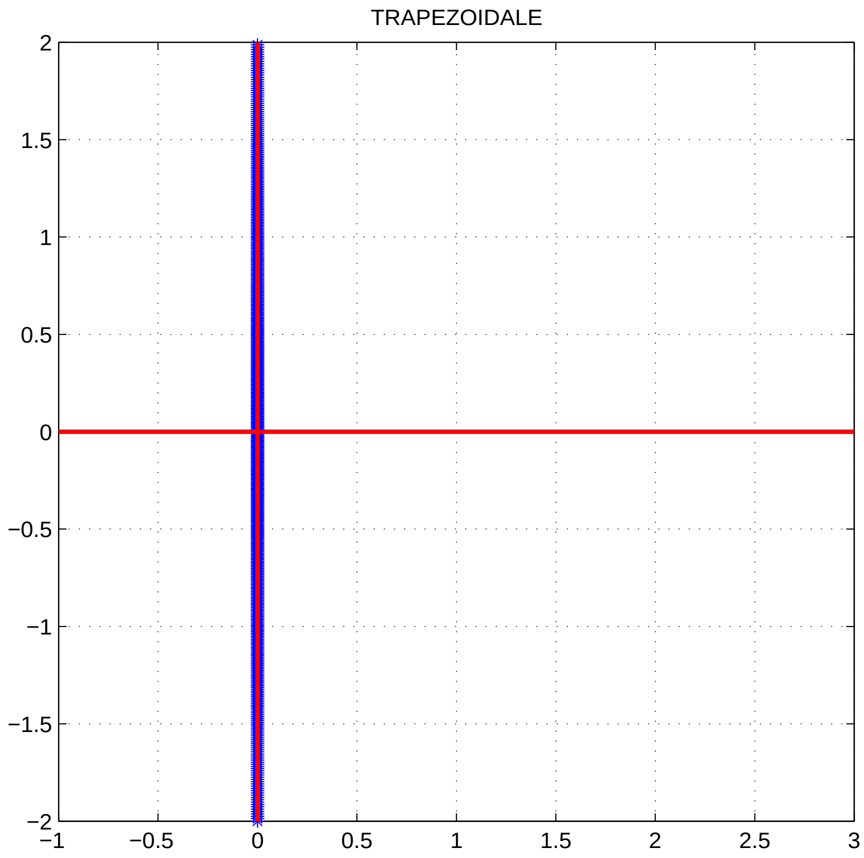
Formula Midpoint

- $y_{n+2} = y_n + 2hf(t_{n+1}, y_{n+1})$
- $\pi(q,\mu) = \mu^2 - 2q\mu - 1$
- *Boundary Locus*



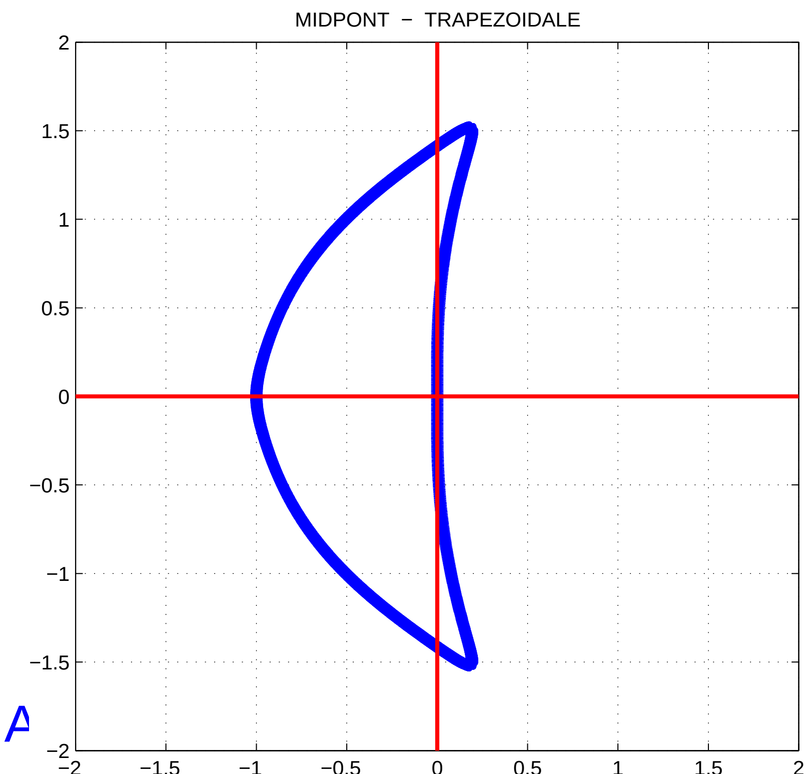
Formula Trapezoidale

- $y_{n+1} = y_n + \frac{h}{2}\left(f(t_n, y_n) + f(t_{n+1}, y_{n+1})\right)$
- $\pi(q,\mu) = (2-q)\mu - (2+q)$
- *Boundary Locus*



Midpoint - Trapezoidale

- Preditore: $y^*_{n+2} = y_n + 2hf(t_{n+1}, y_{n+1})$
- Correttore:
  $y_{n+2} = y_{n+1} + \frac{h}{2}\left(f(t_{n+1}, y_{n+1}) + f(t_{n+2}, y^*_{n+2})\right)$
- $\pi(q,\mu) = \mu^2 - (1 + \frac{q}{2} + q^2)\mu - \frac{q}{2}$
- *Boundary Locus*



Midpoint - Trapezoidale