# euler,ex

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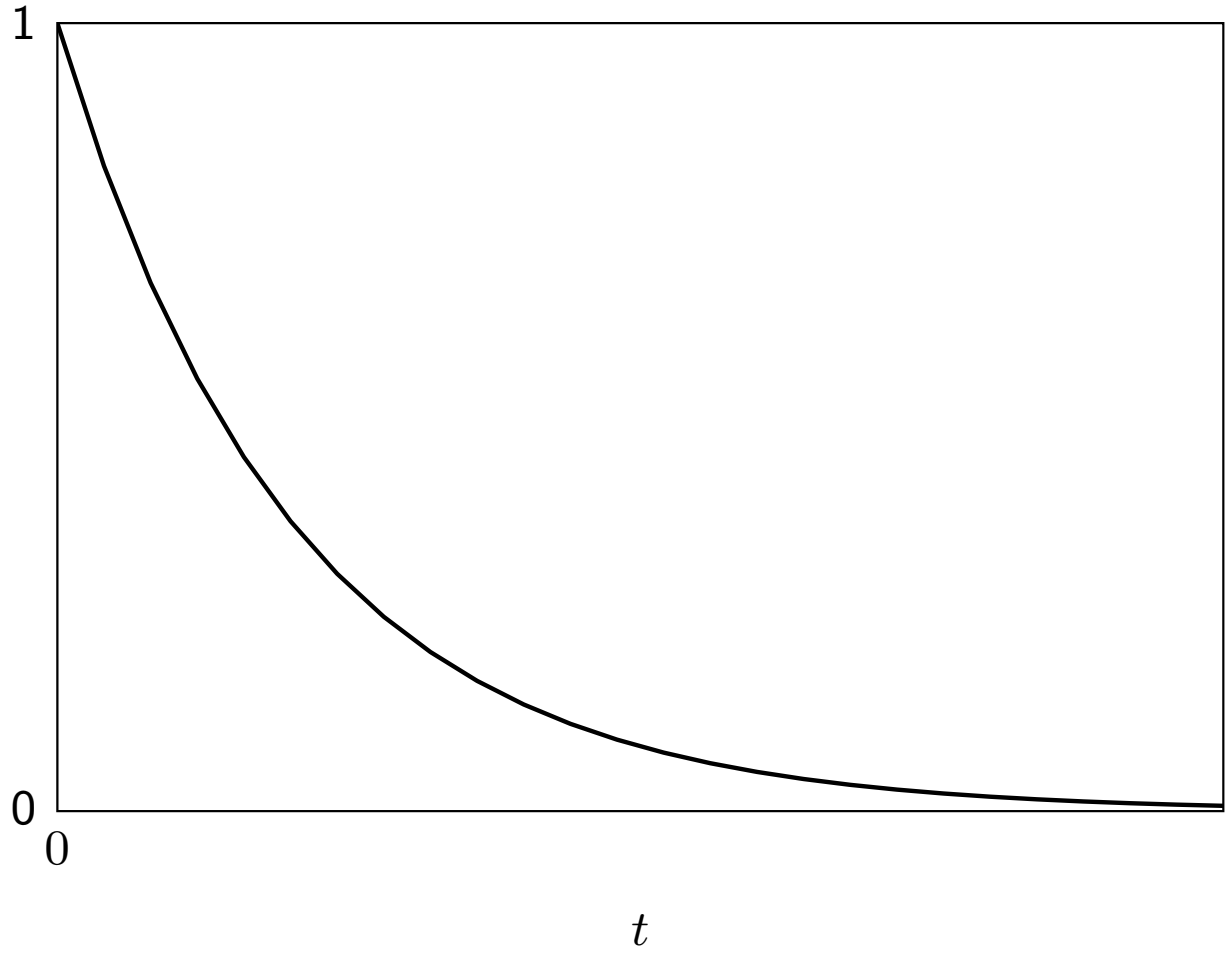

# euler,ex

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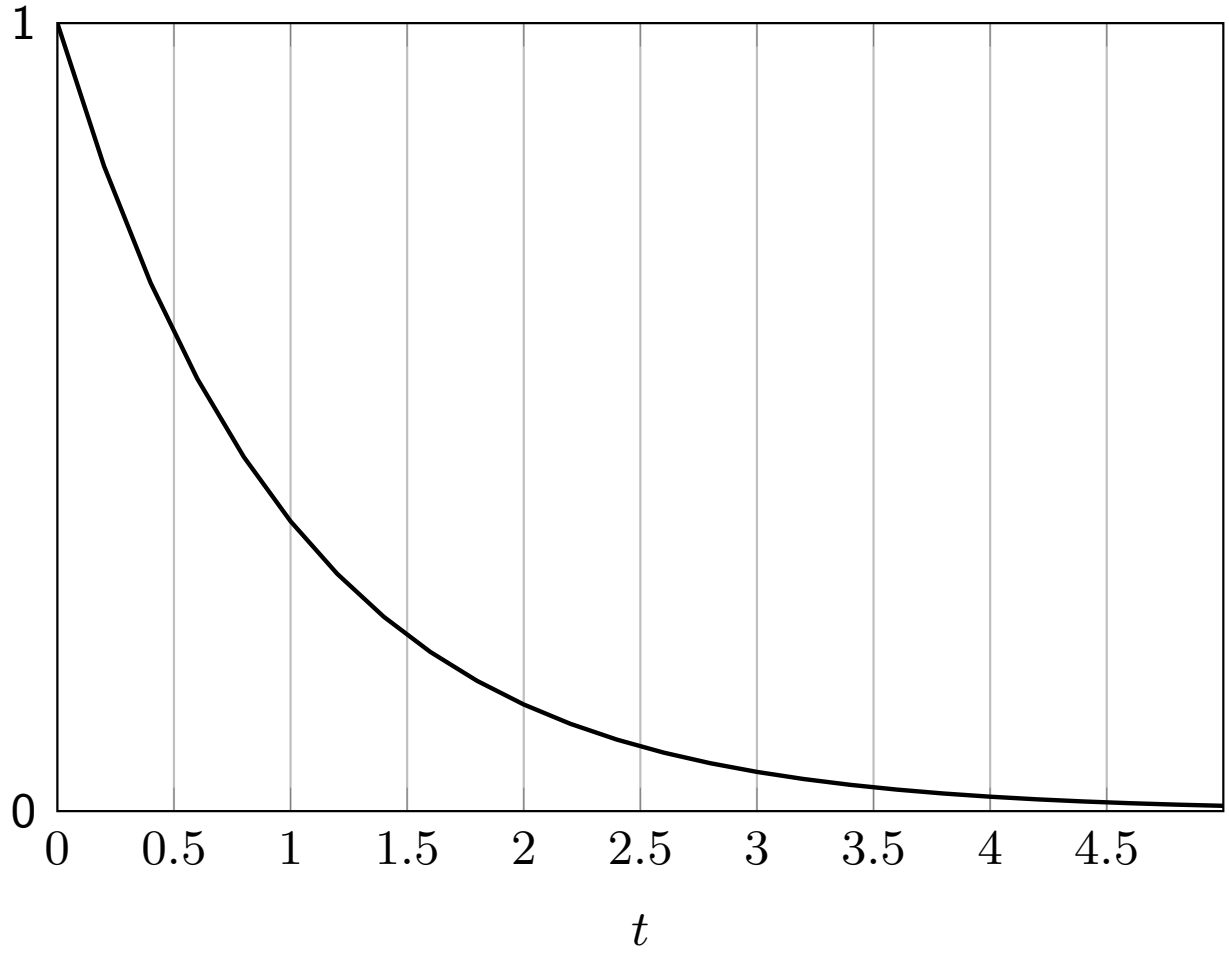
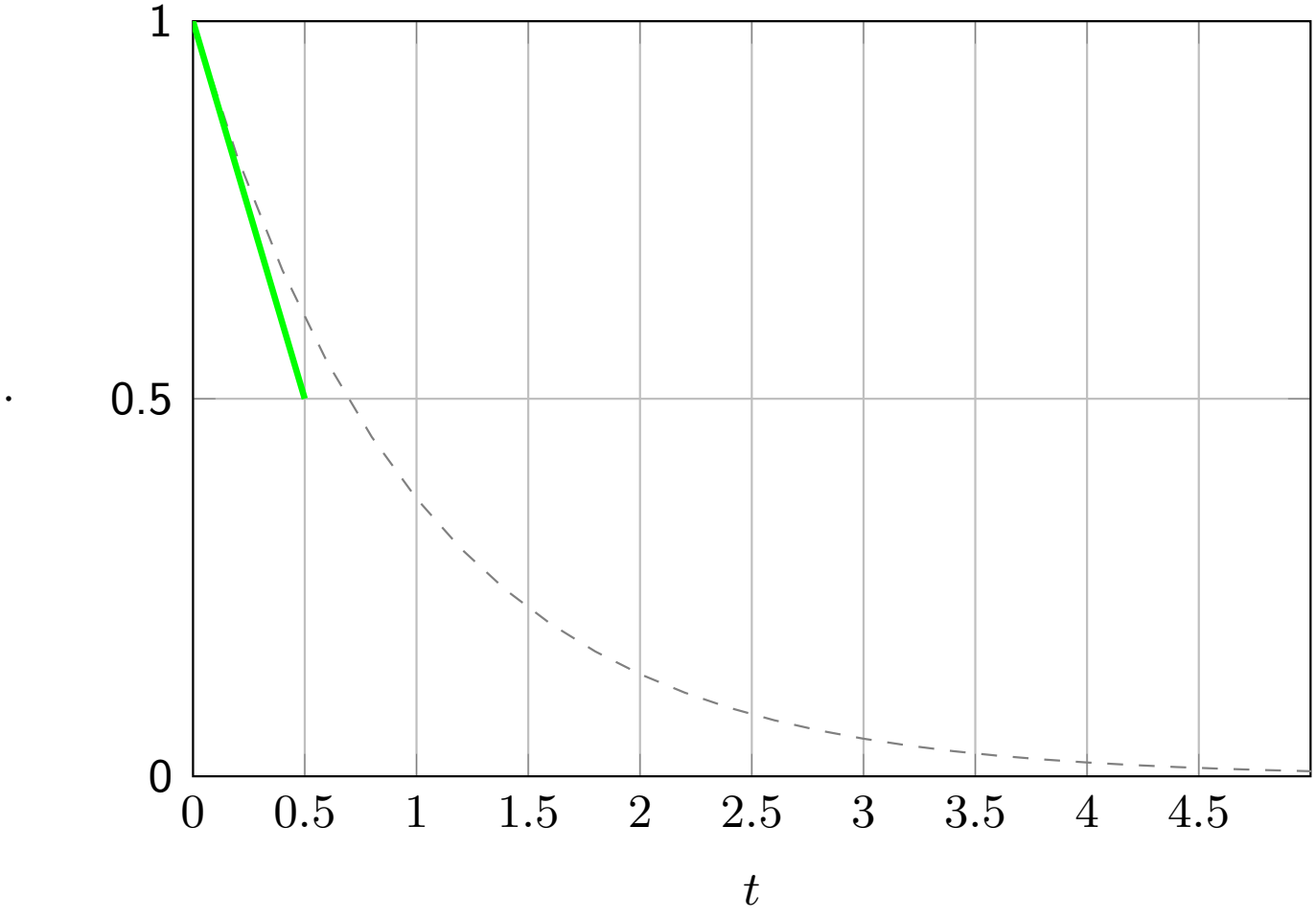
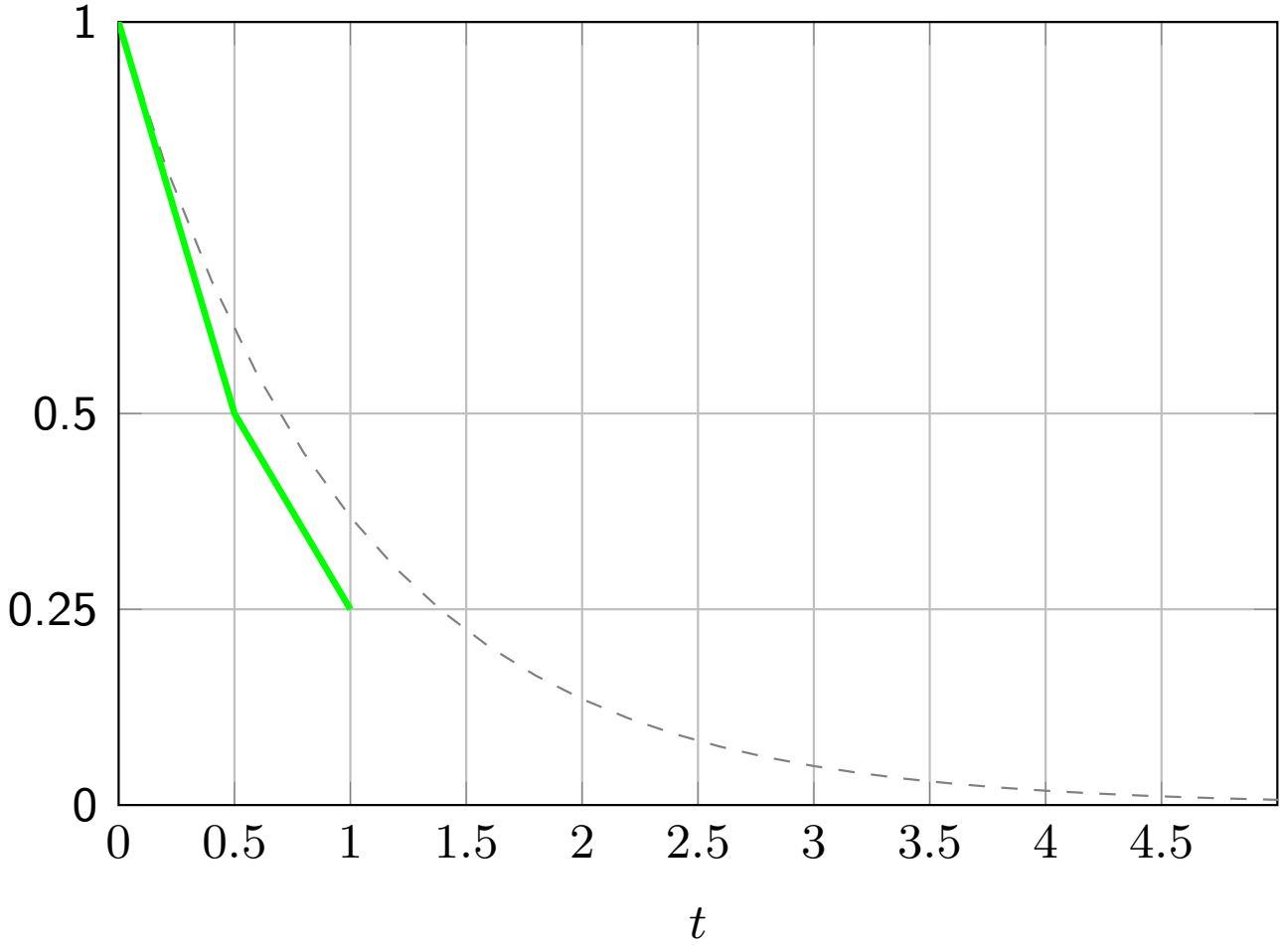


# euler,ex



# euler,ex



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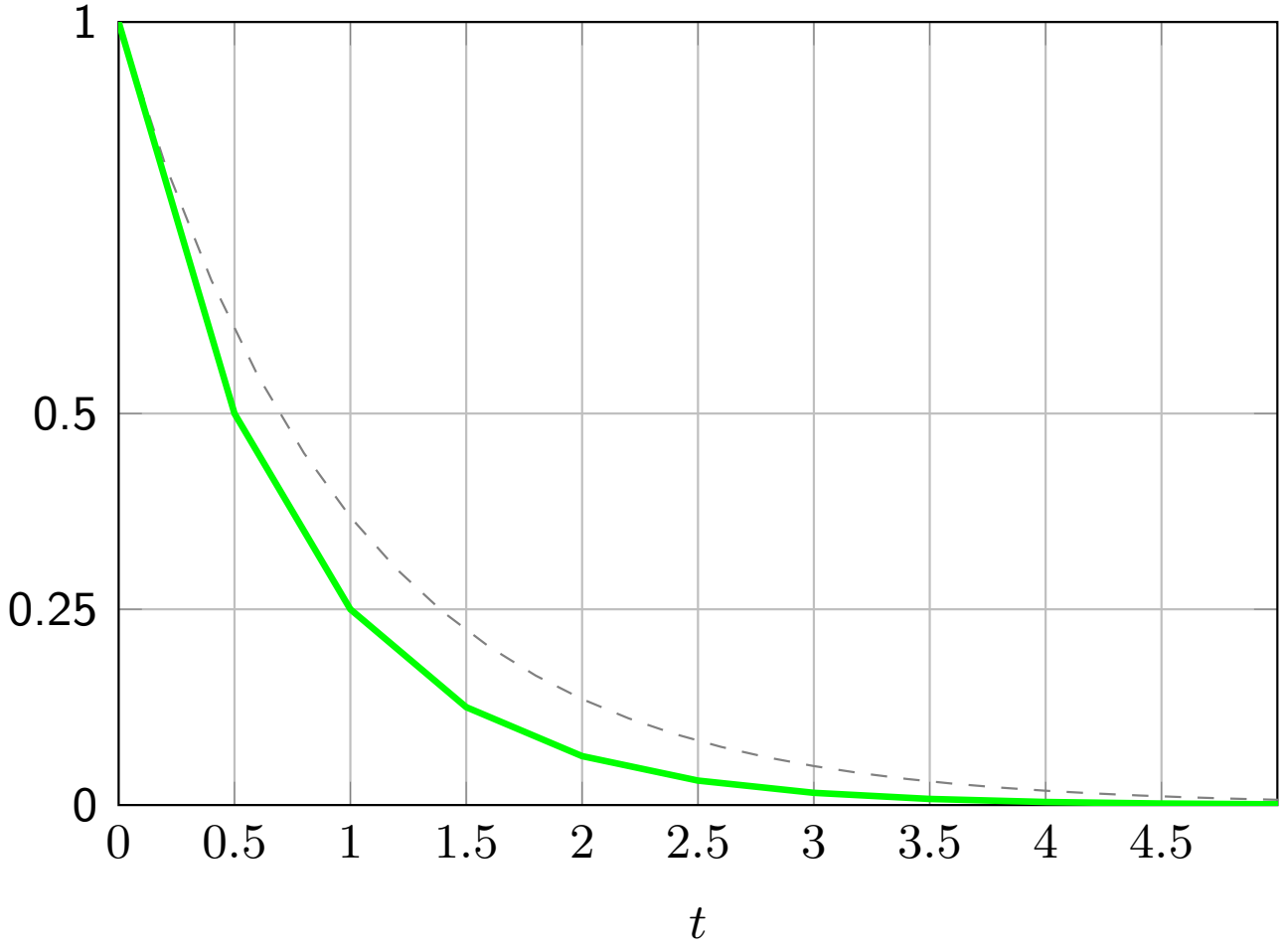
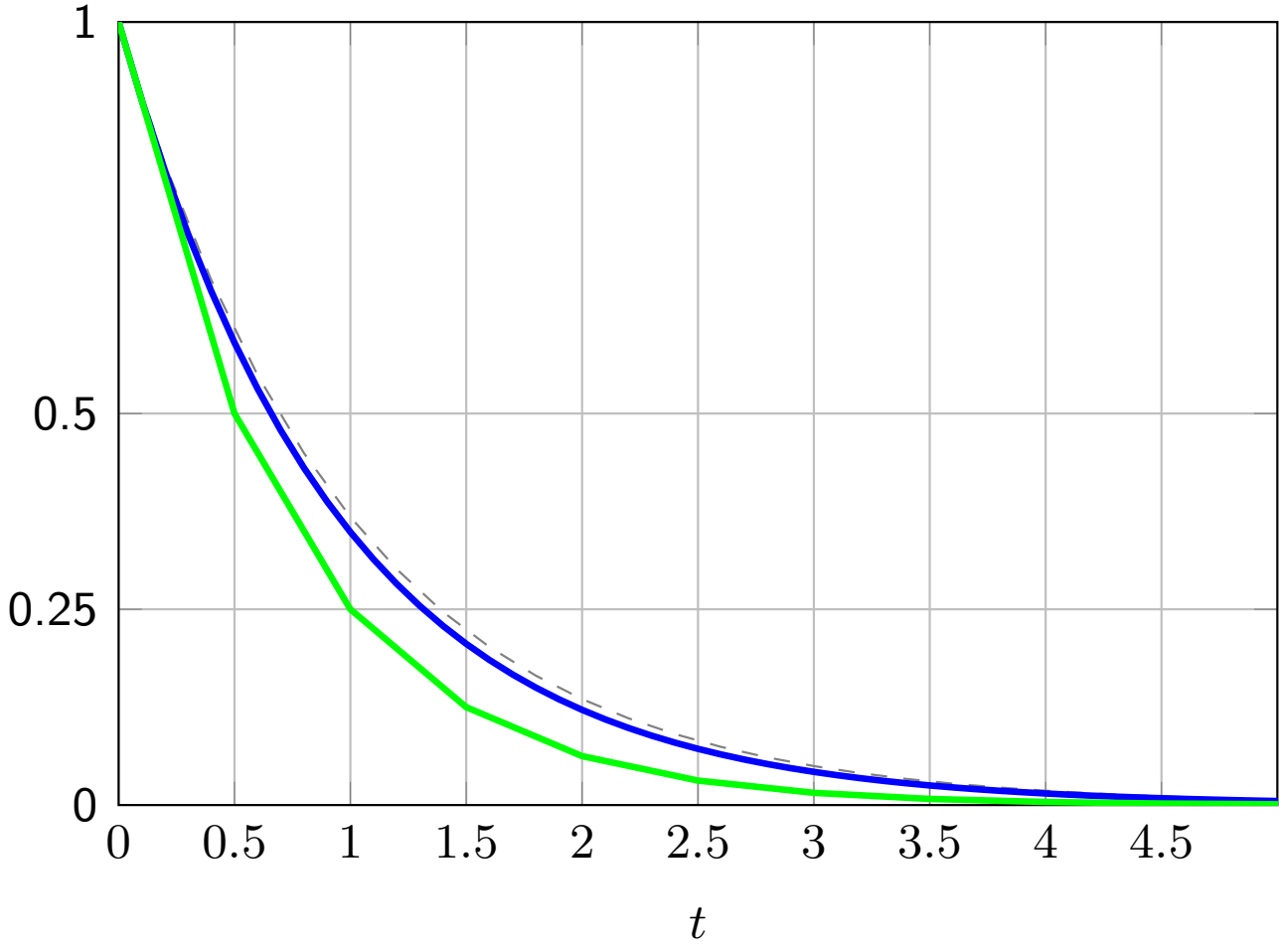


# euler,ex



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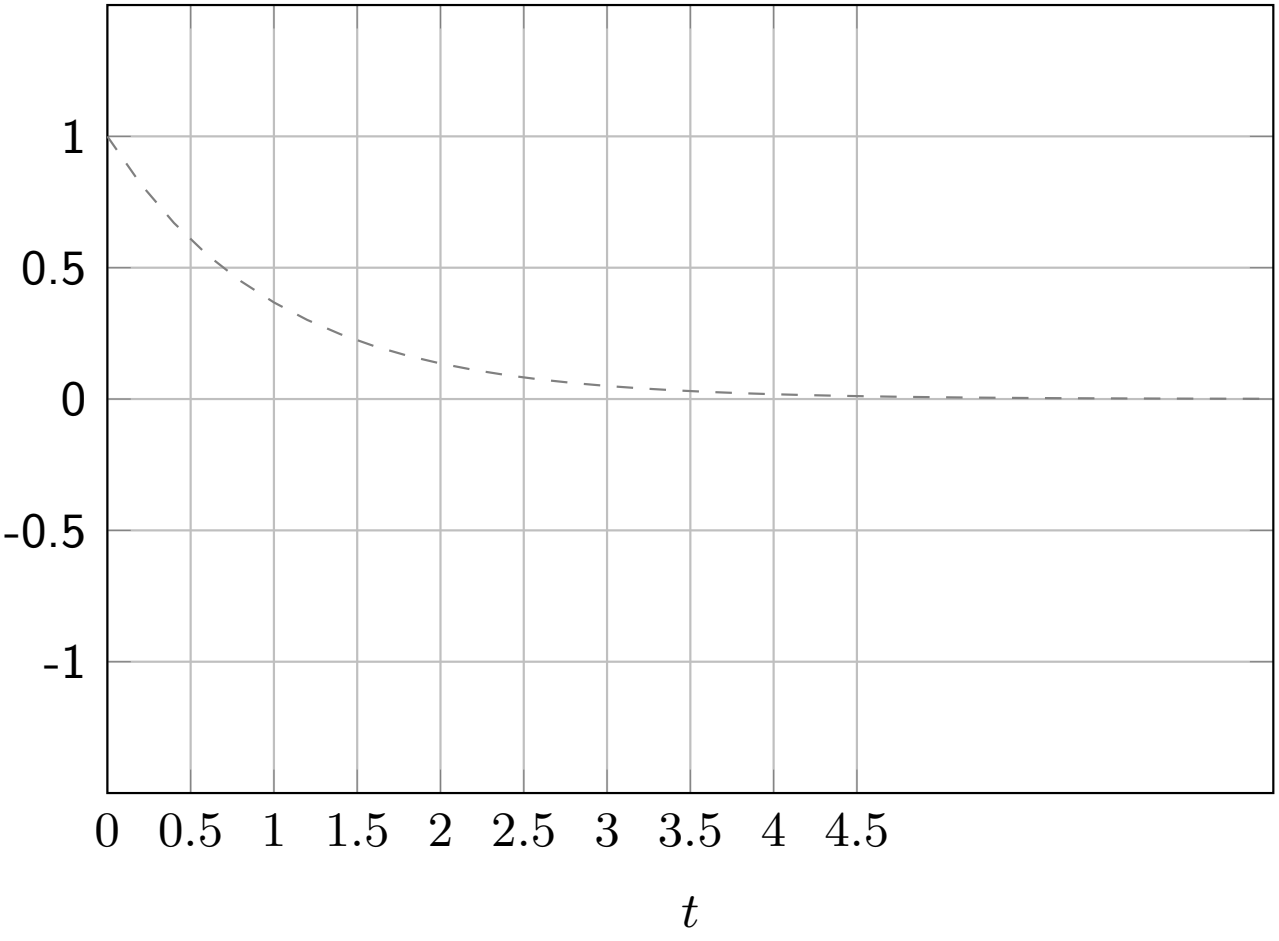
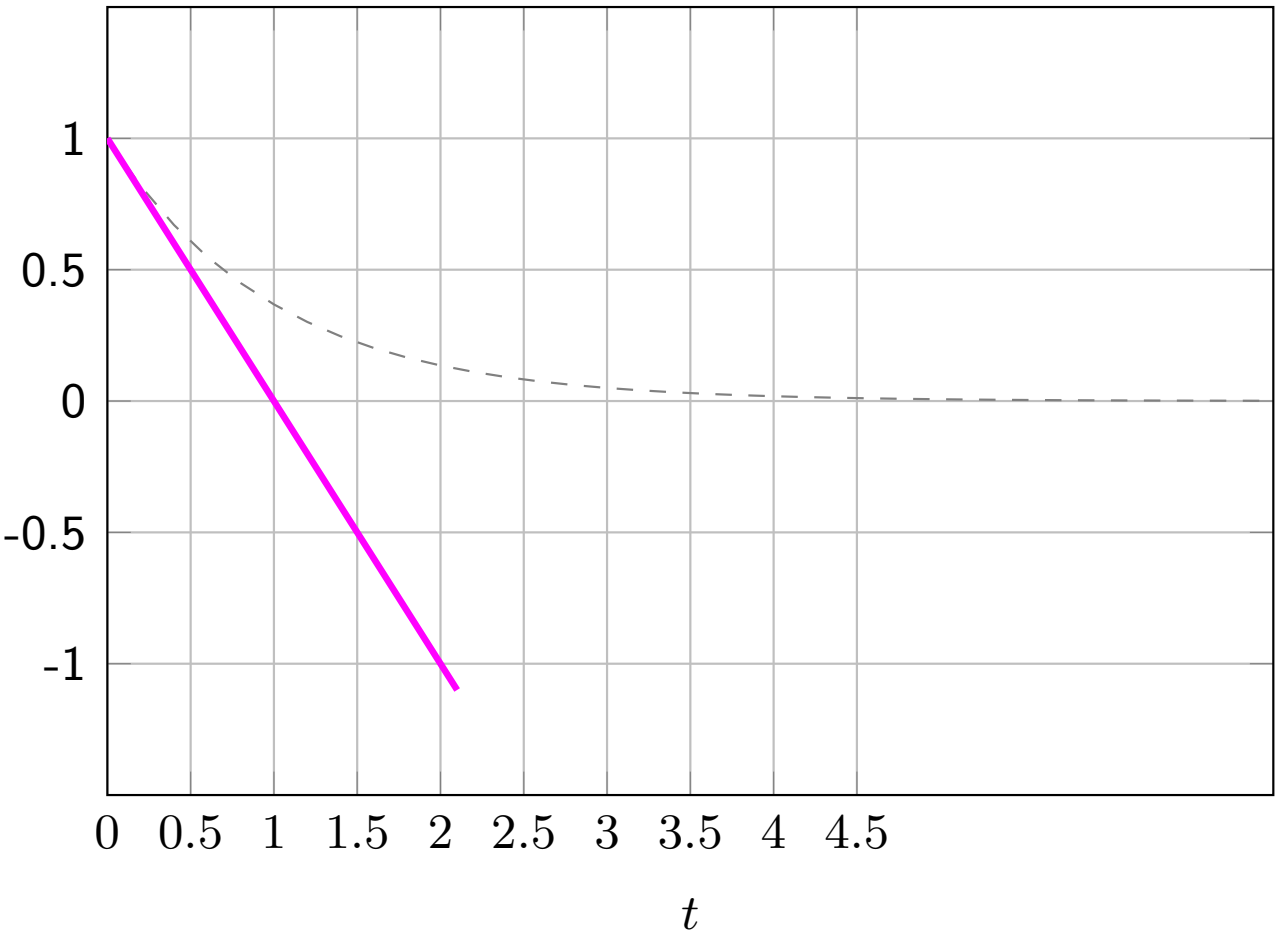
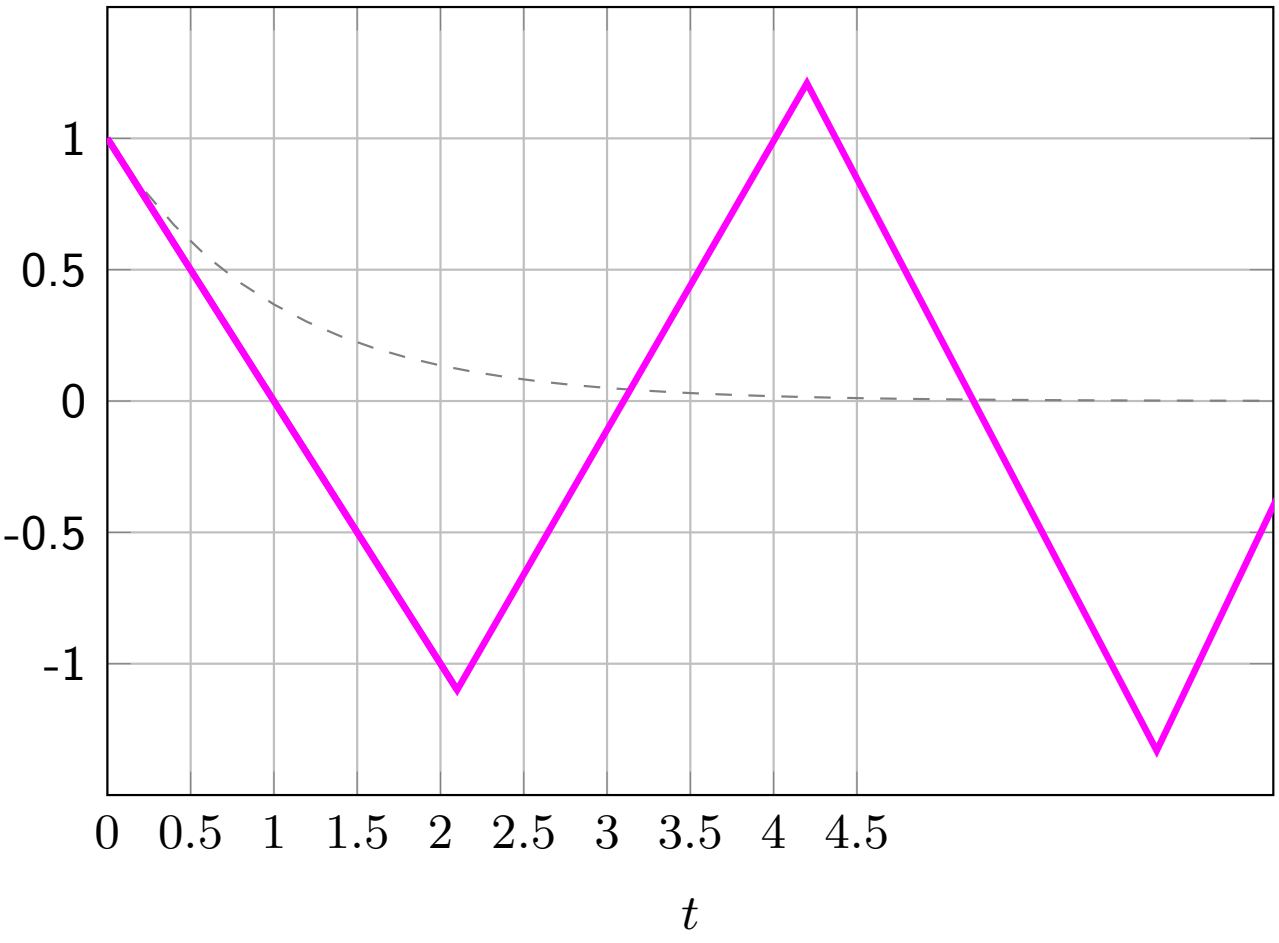


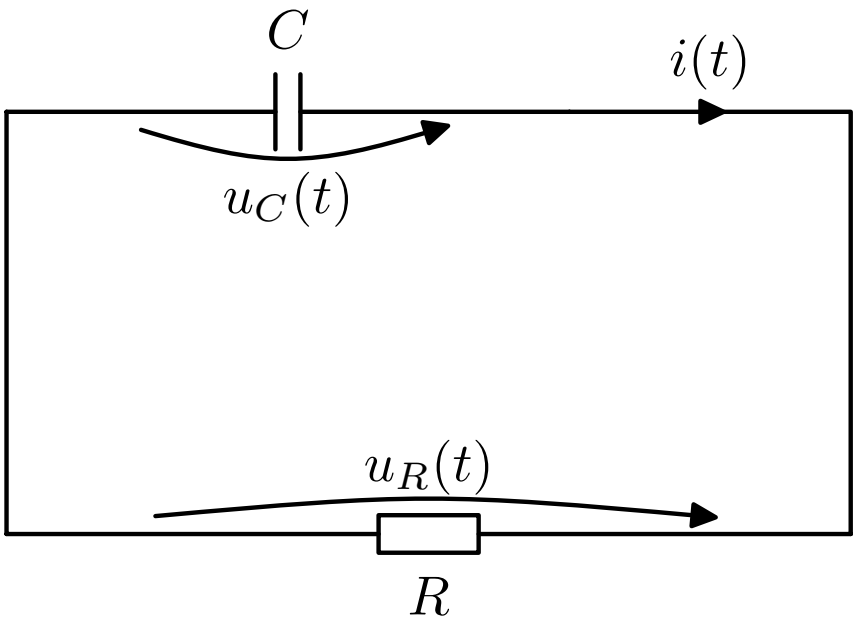
# euler,ex



# euler,ex



# Beispiel



# Beispiel

$$u_C(t) = u_R(t) := u(t)$$

$$i(t) = \frac{-u_R(t)}{R}$$

$$u_C(t) = u_0 + \frac{1}{C}\int_0^t i(t)\mathrm{d}t$$

$$\dot{u}(t) = \tfrac{-1}{RC}\, u(t), \quad u(0) = u_0$$

$$\dot{x} = \lambda x, \quad x(0) = x_0$$

hier: $\dot{x} = -x$

Echte Lösung:

$x(t) = x_0 e^{\lambda t}$

# euler,im

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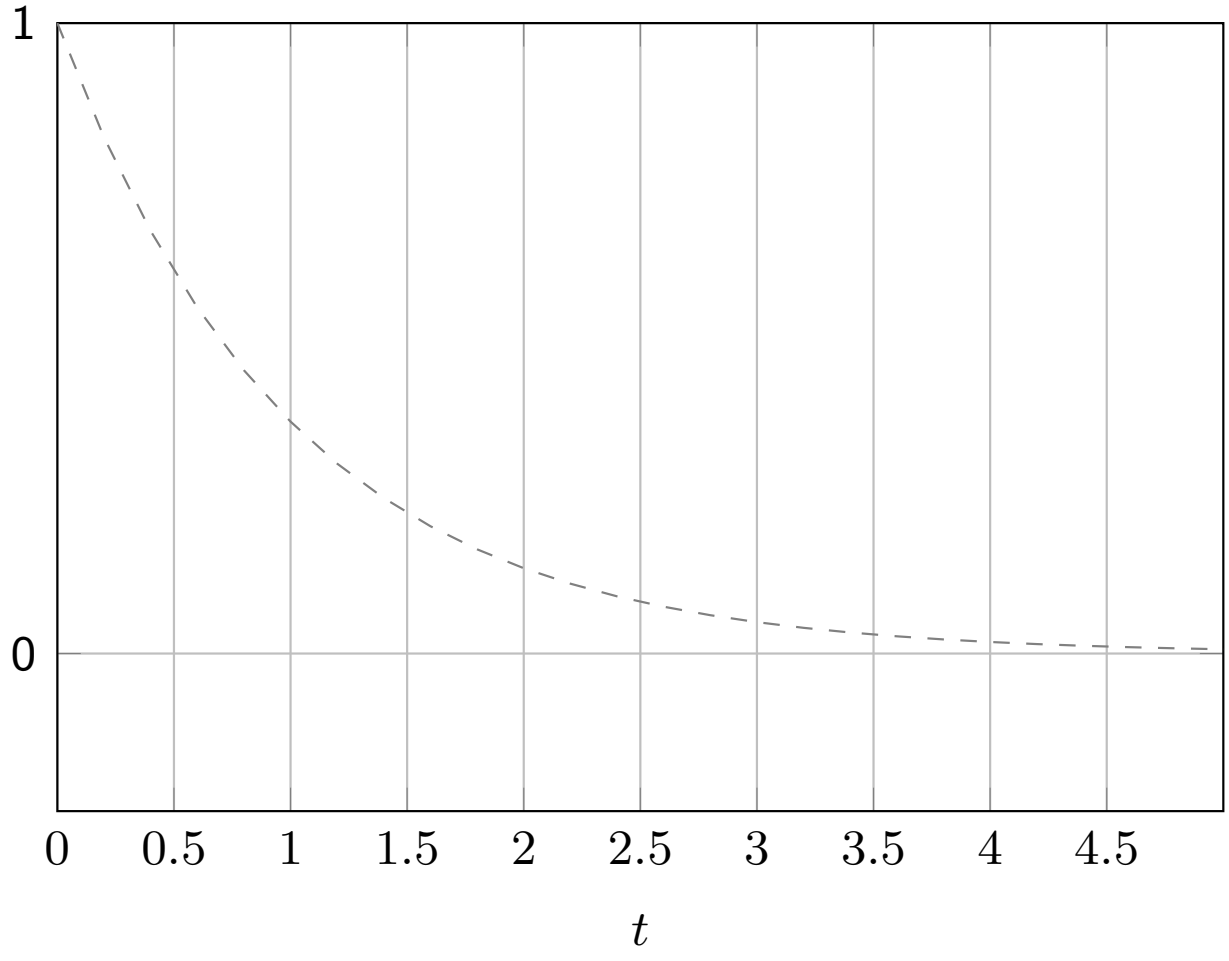
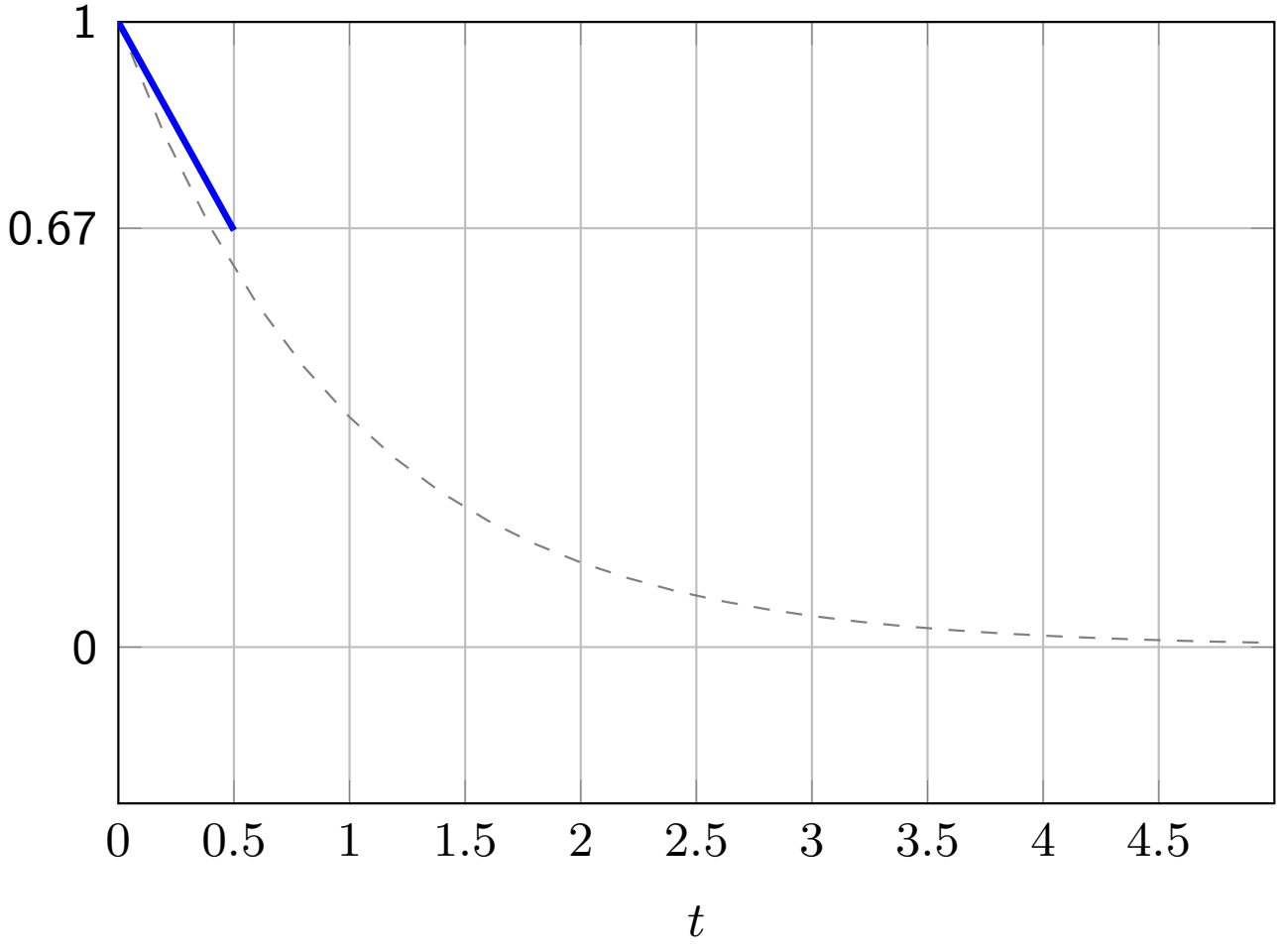


# euler,im



# euler,im

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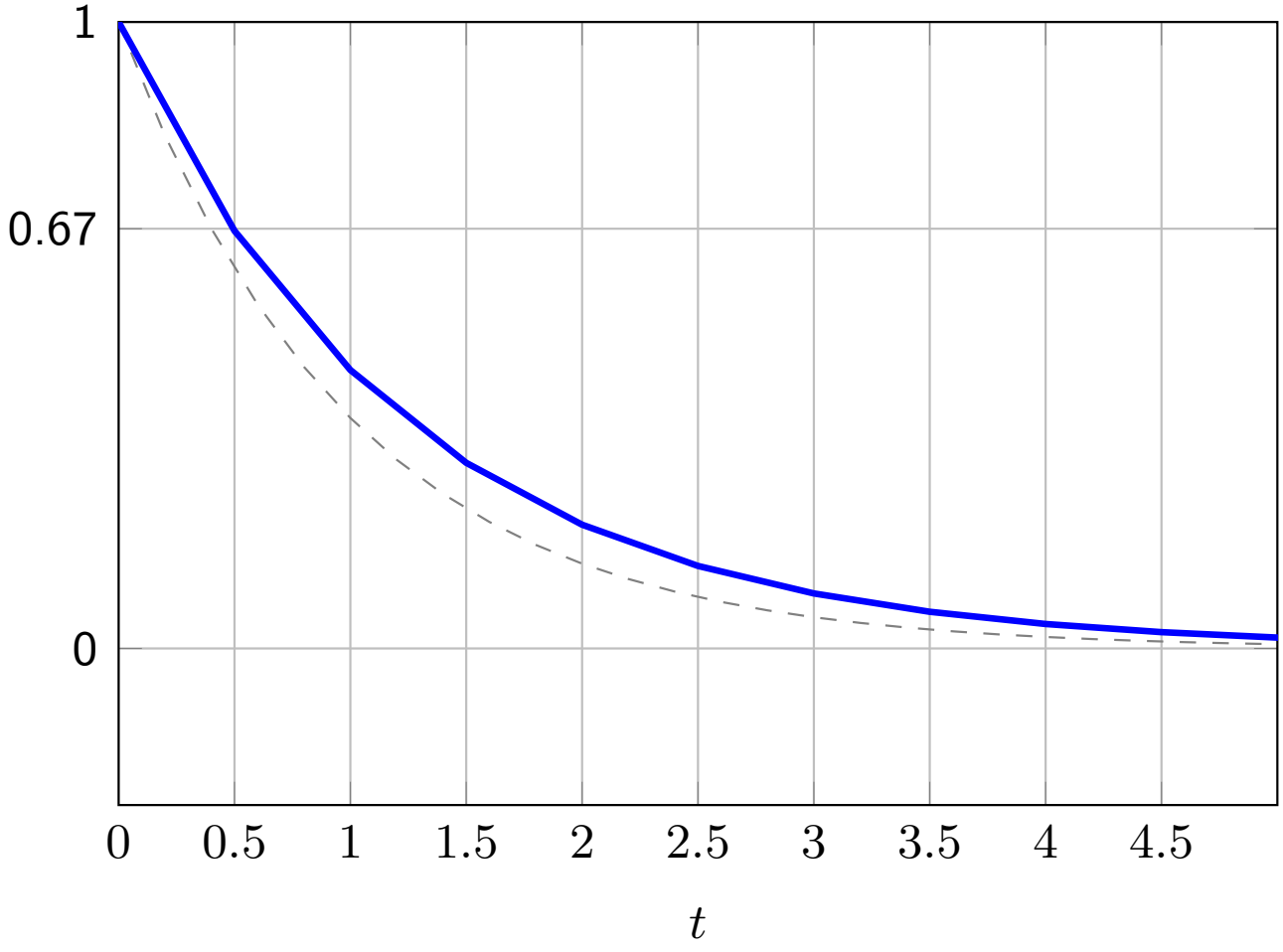

# euler,im

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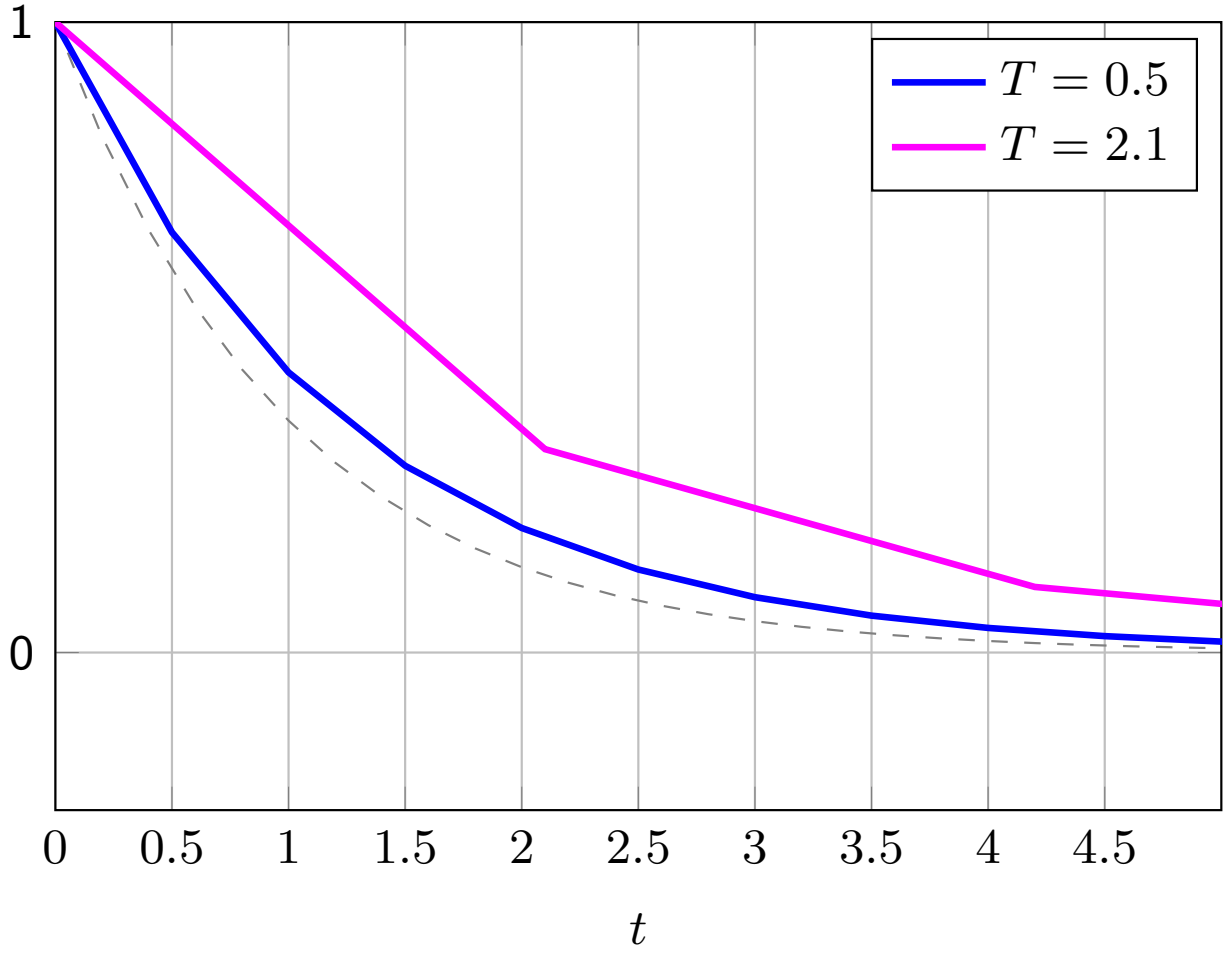

# euler,im

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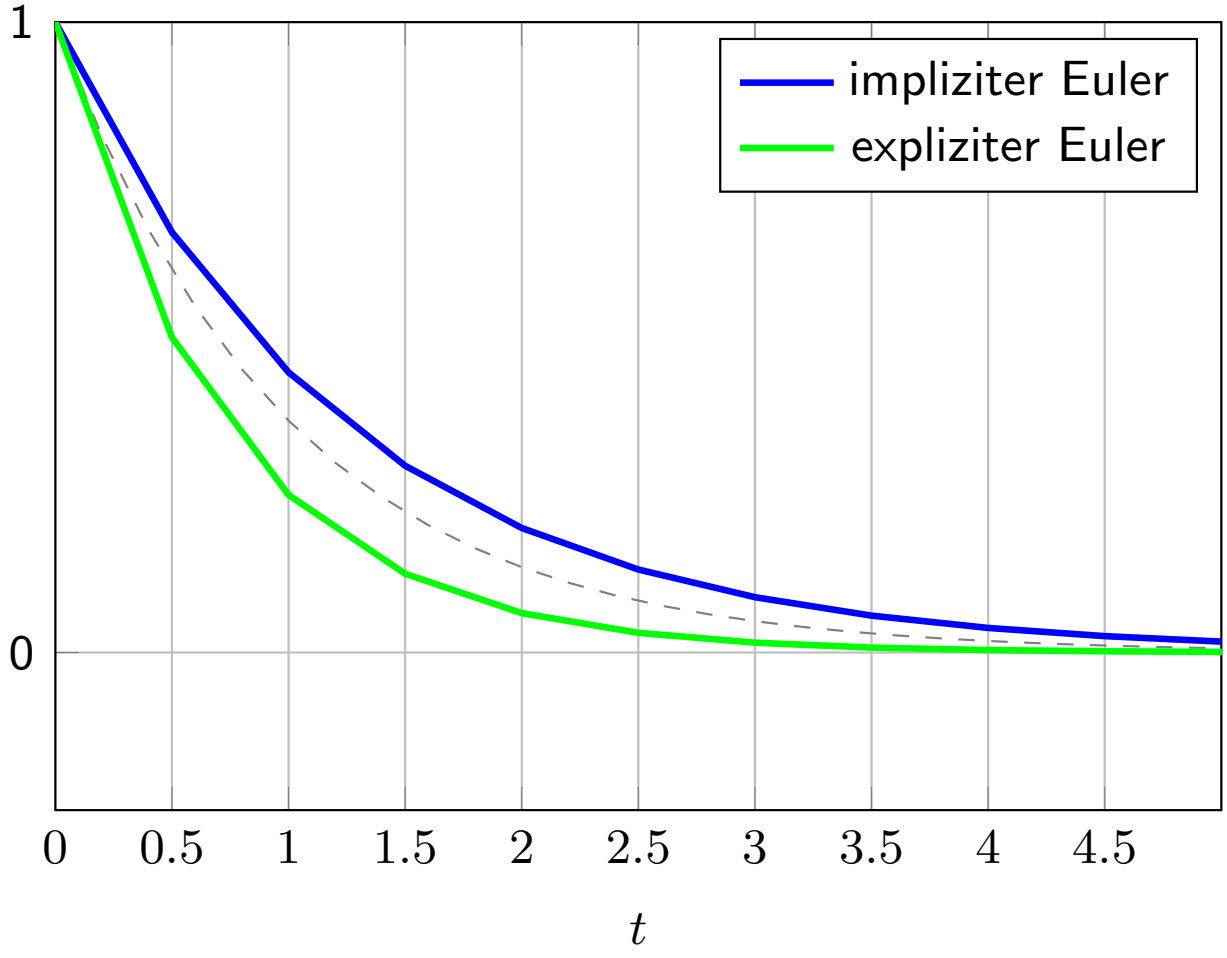

# Trapez

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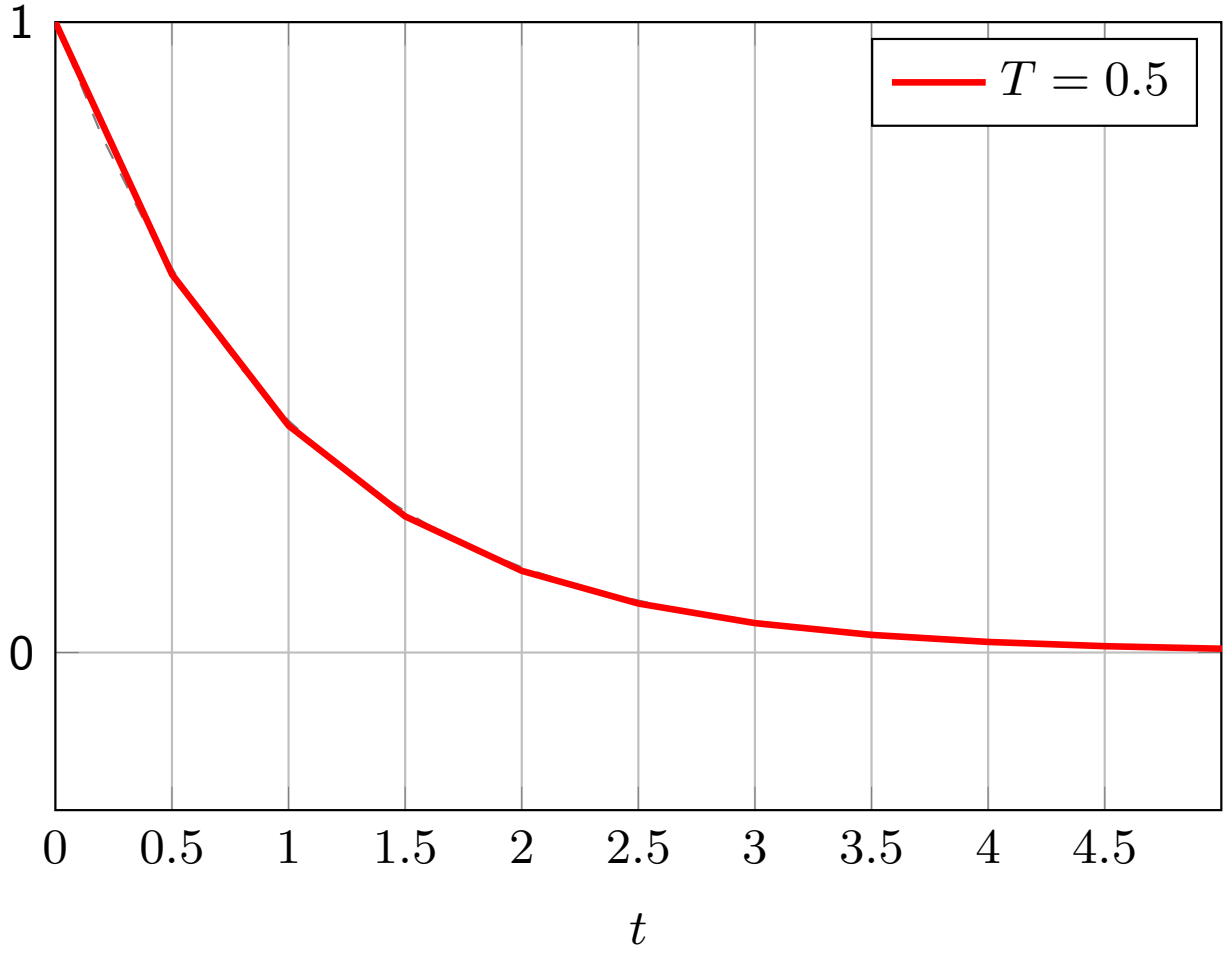

# Trapez

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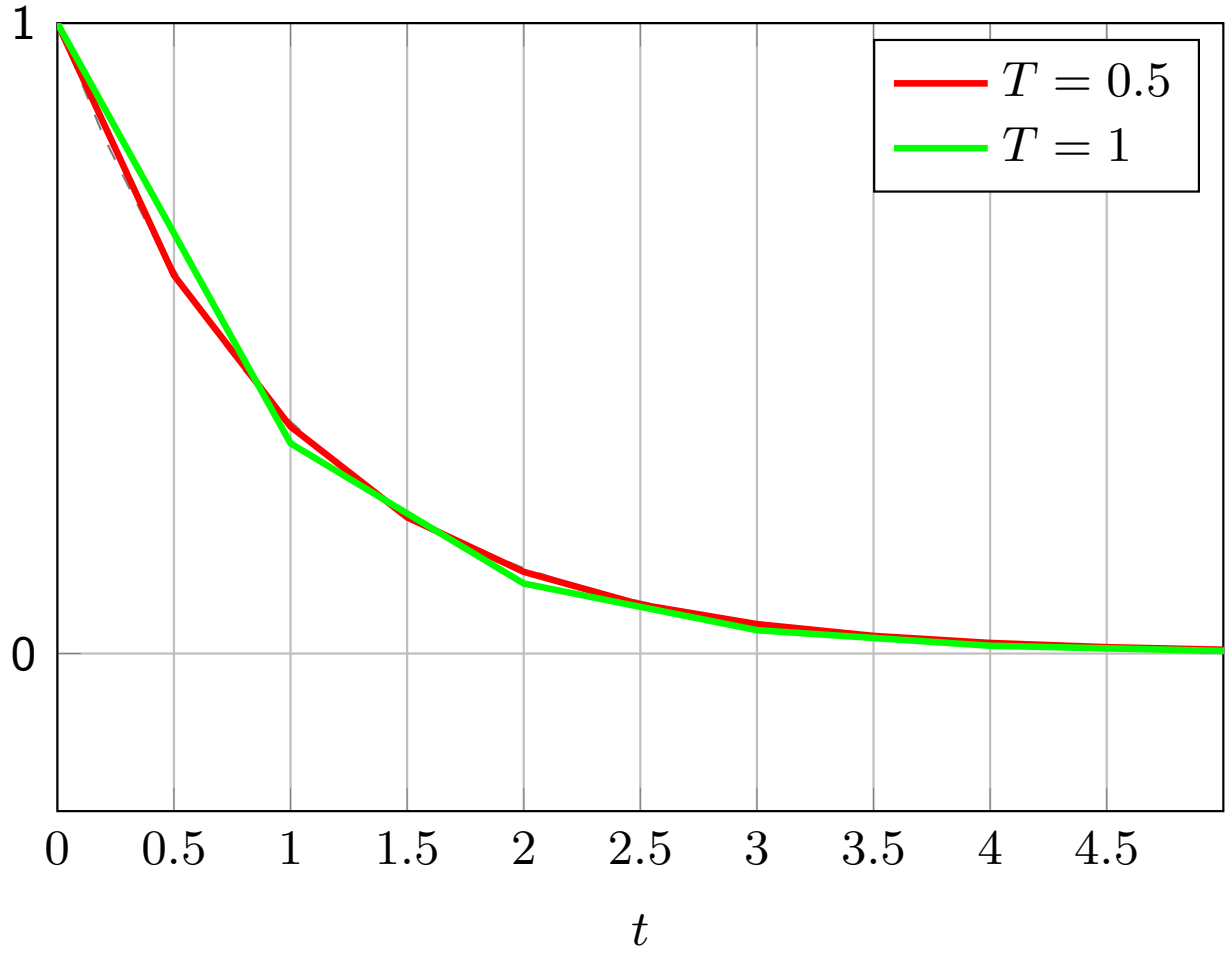

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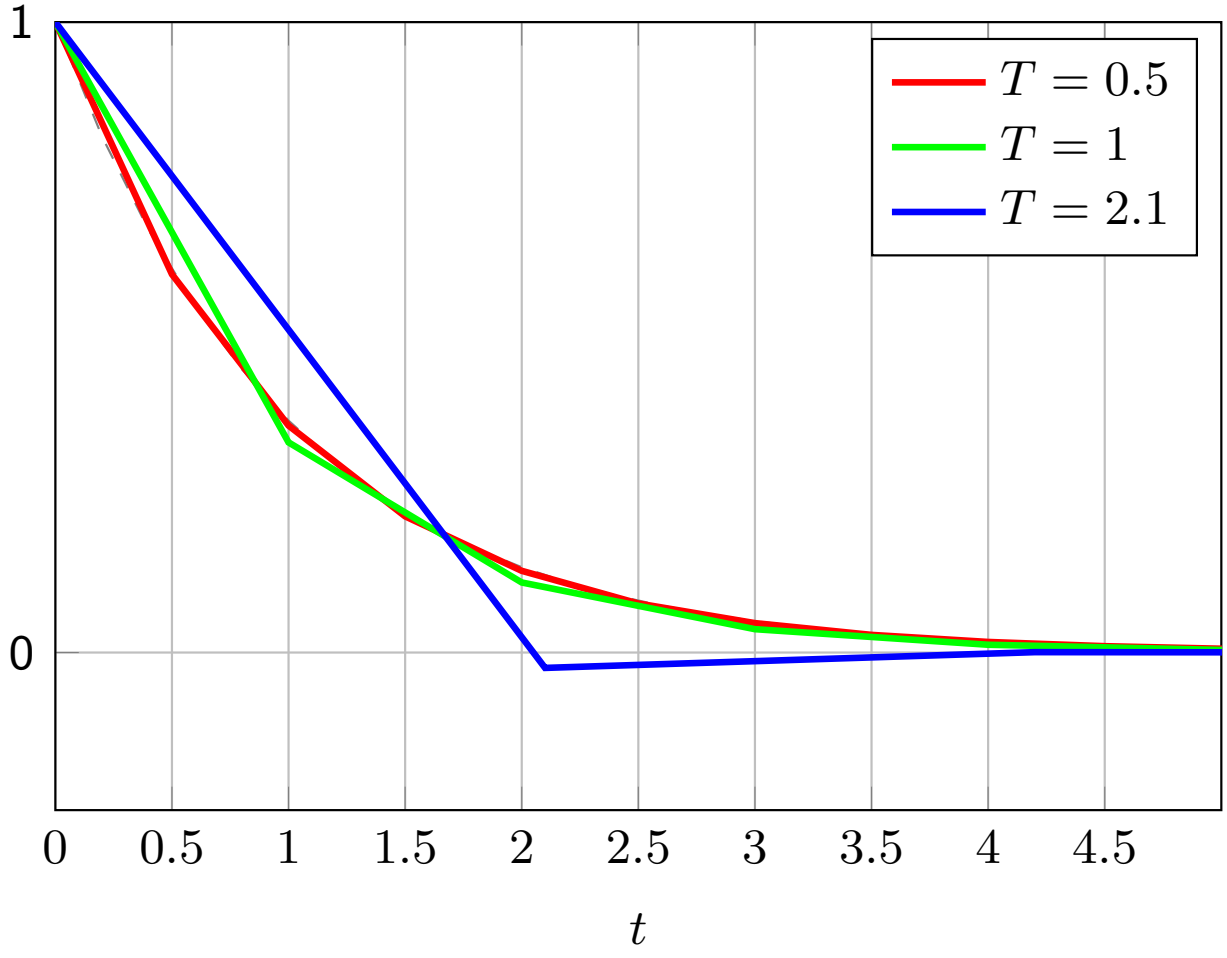

# Heun

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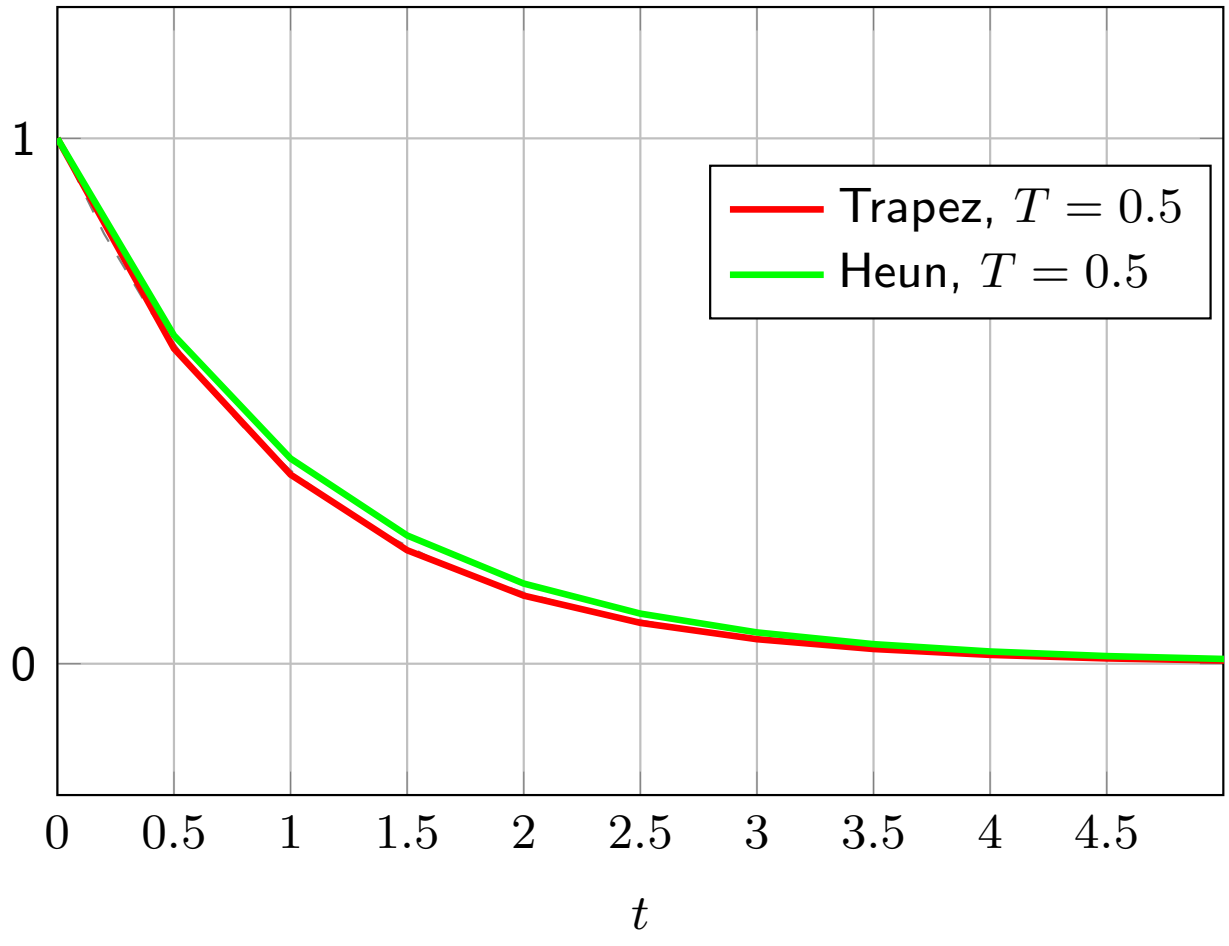

# Heun

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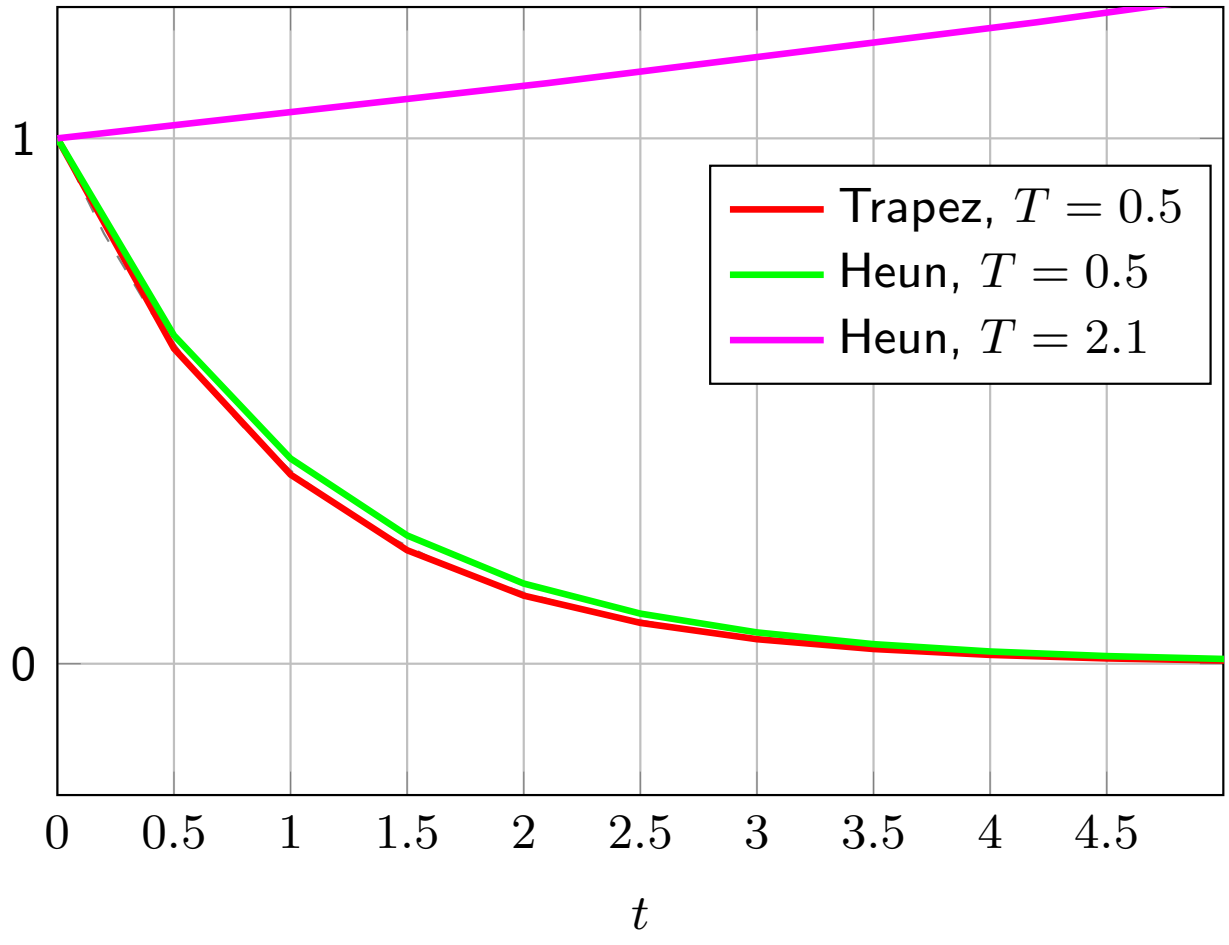
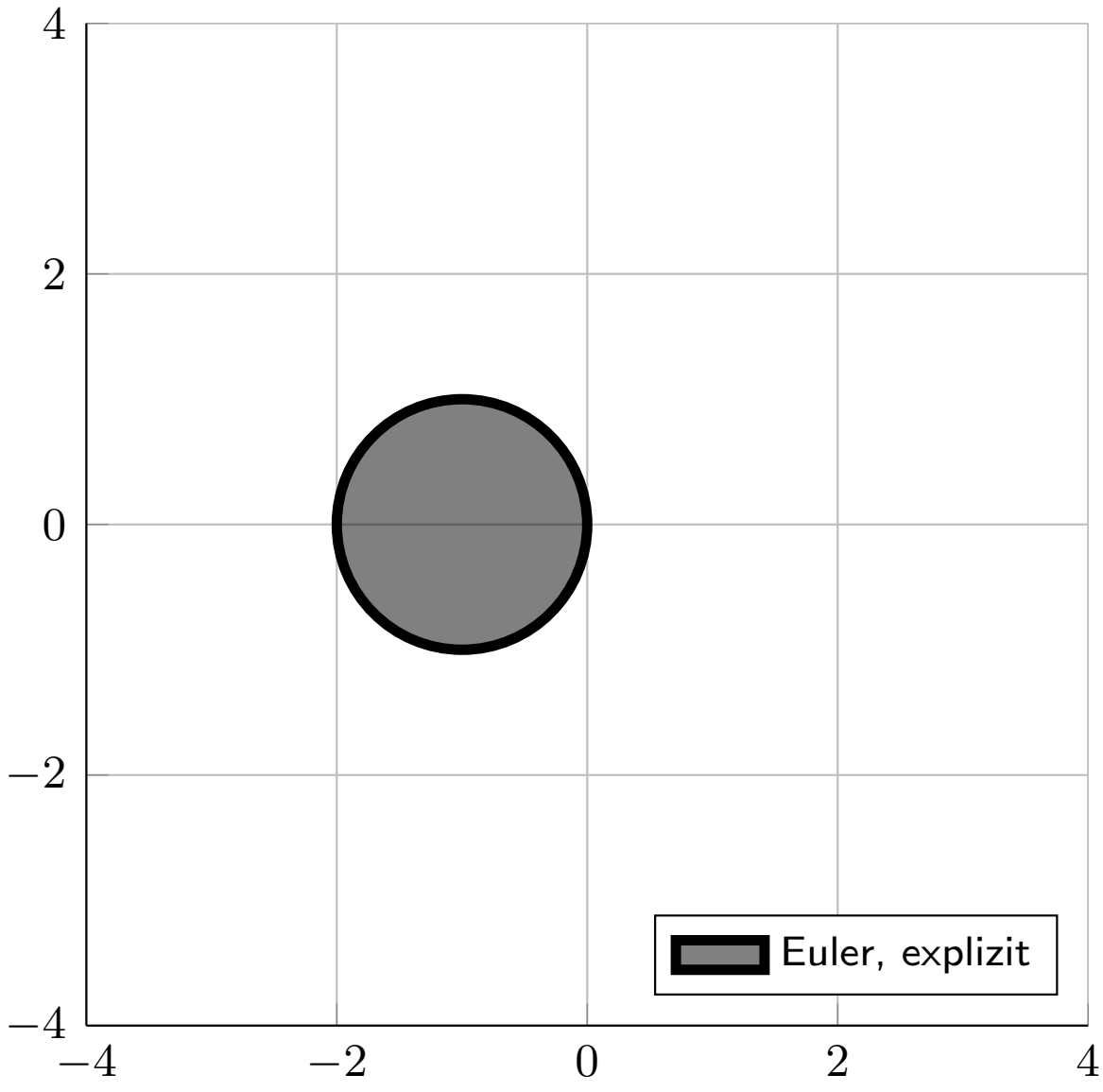
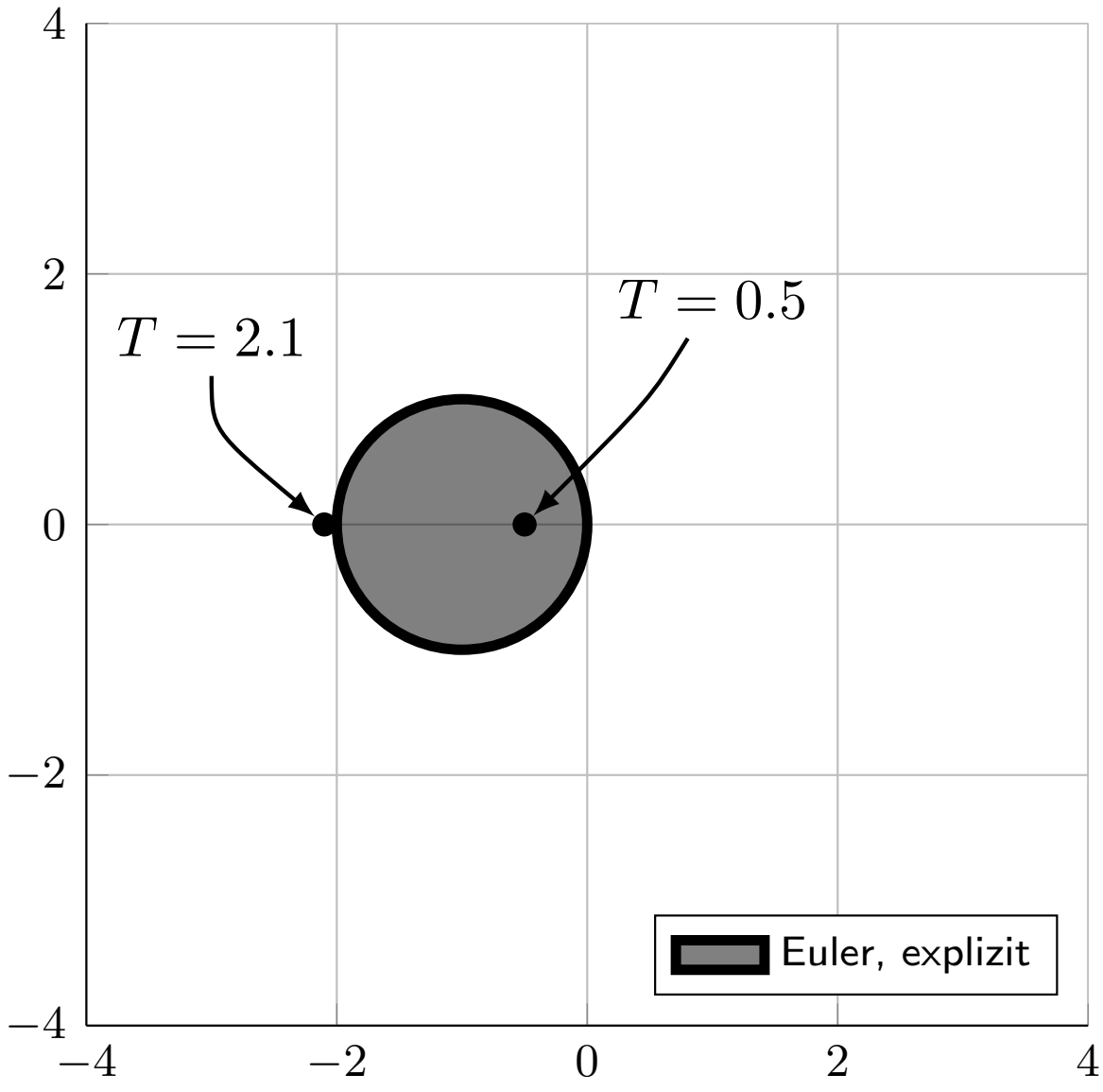


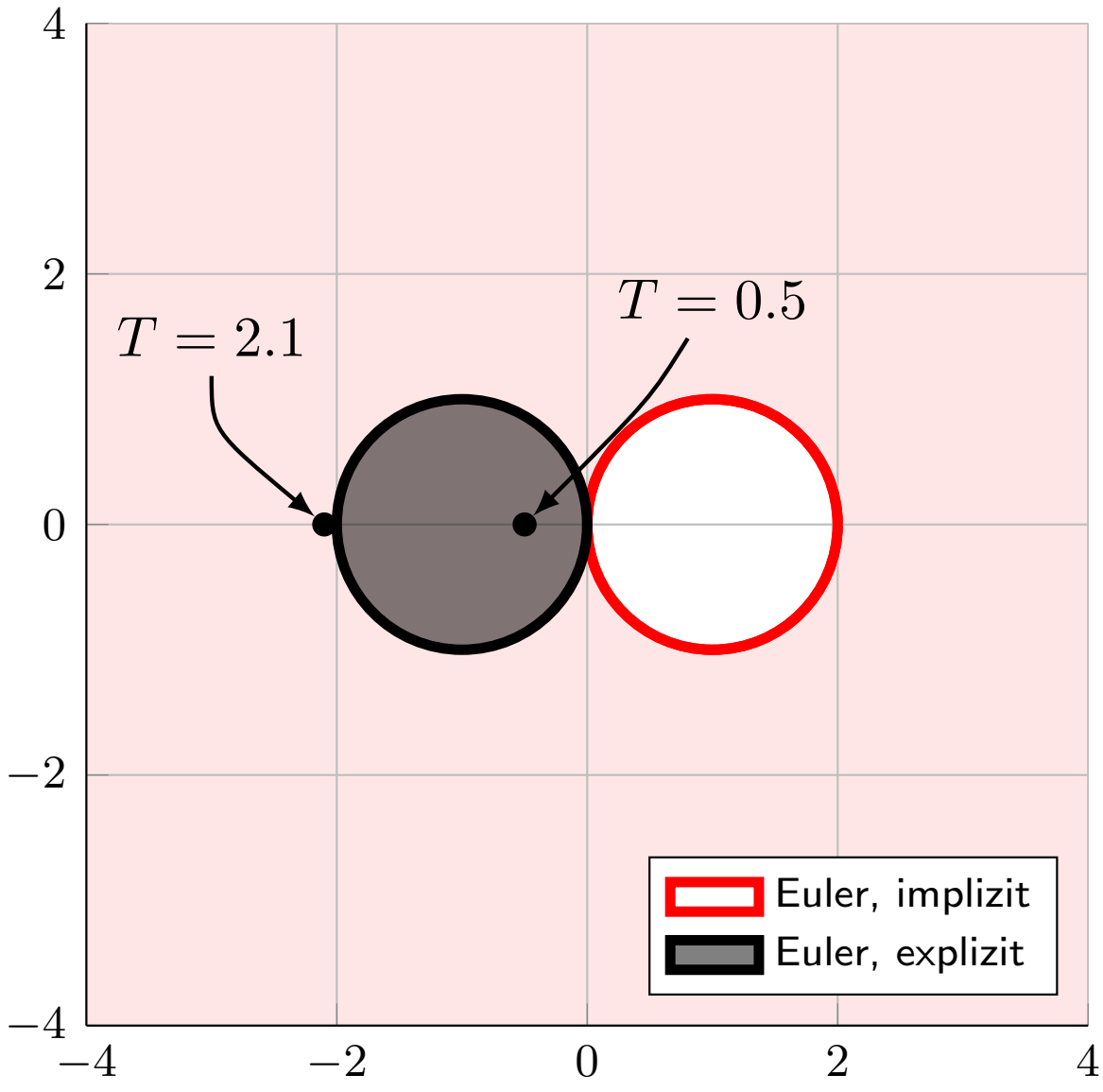
# stabis



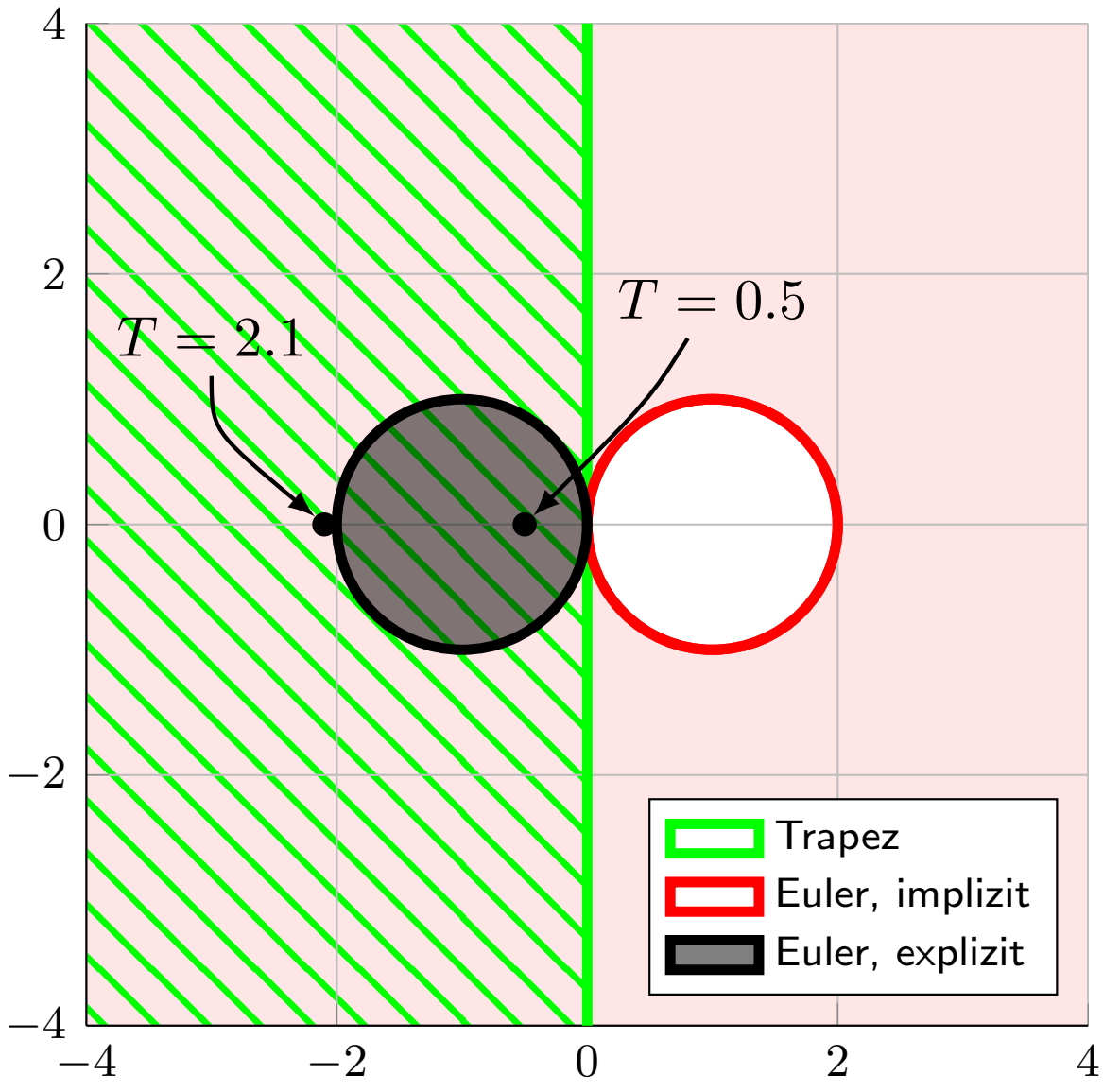
# stabis



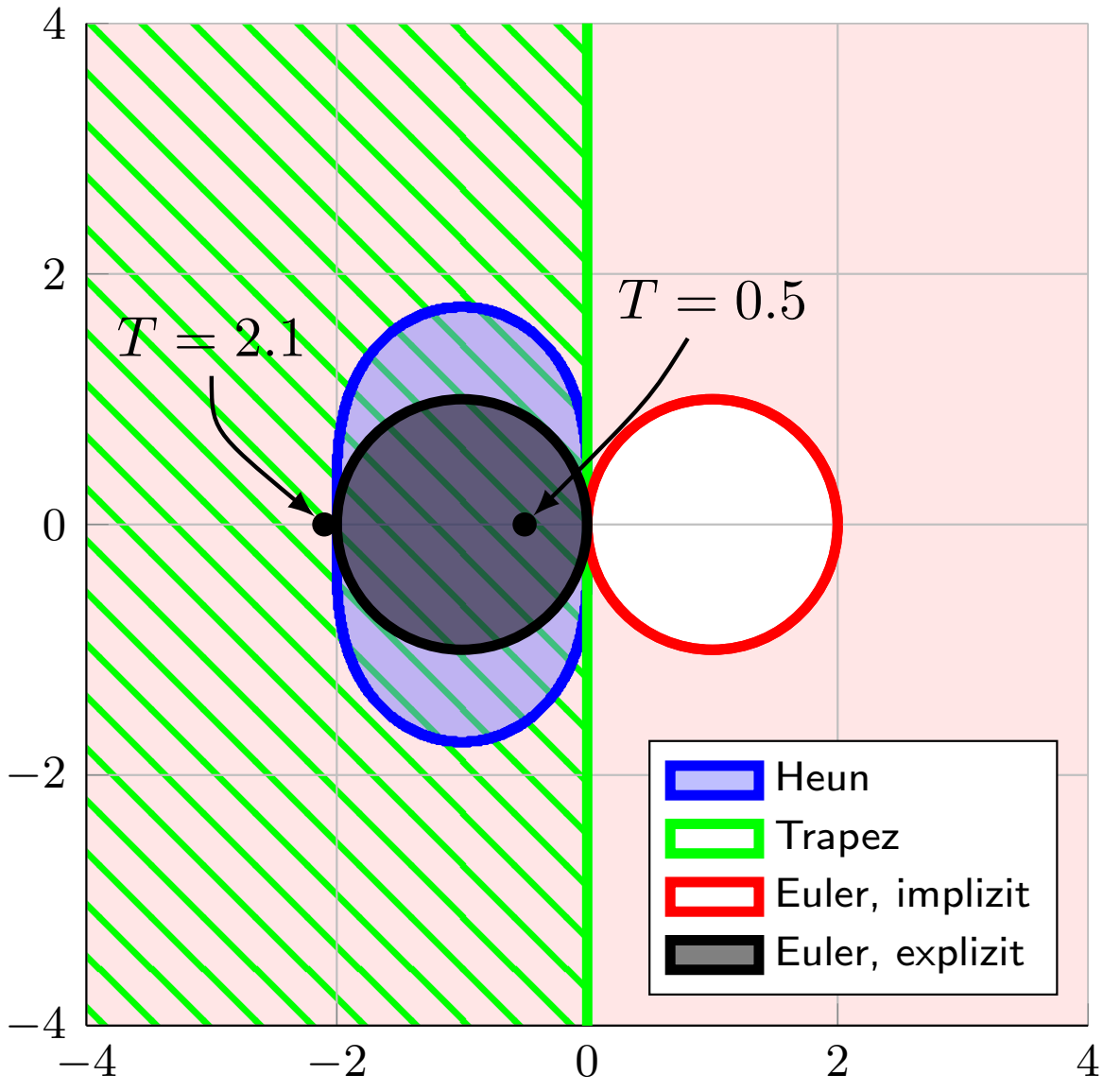
# stabis



# stabis



# stabis


4
2
0
−2
−4
−4
−2
0
2
4
$T = 2.1$
$T = 0.5$
Heun
Trapez
Euler, implizit
Euler, explizit

hierrein

$x_{i+1}$ mit Konsistenzordnung $s$
$\hat{x}_{i+1}$ mit Konsistenzordnung $s-1$

$x$

S