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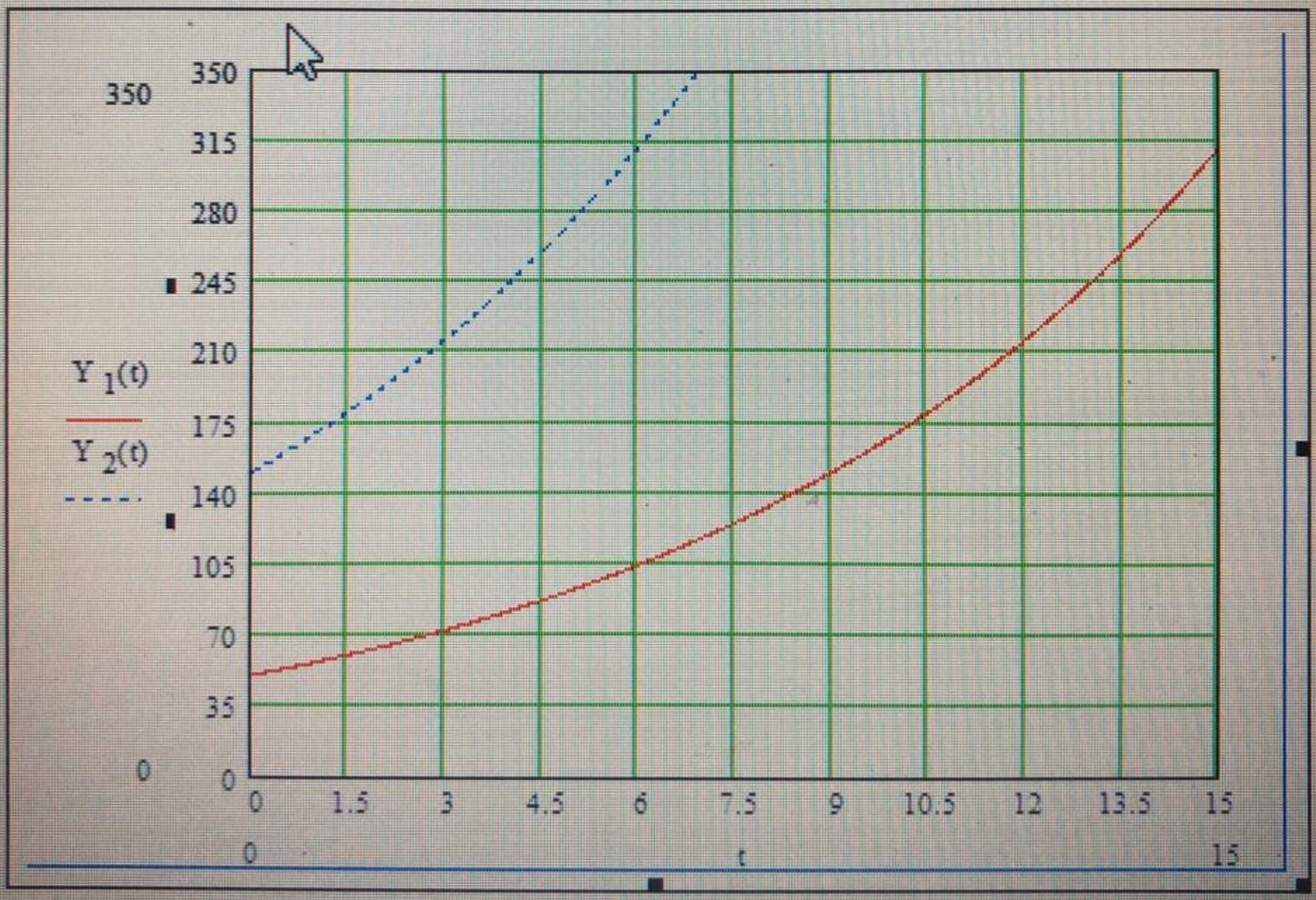
$$Y_1(t) := 50e^{0.122t}$$

$$Y_2(t) := 150e^{0.122t}$$



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$y = y_0 e^{kL}$

$\frac{y}{y_0} = e^{kt}$.

$\therefore \frac{y}{y_0} = e^{kt} = 3$ at $t = 9$.

$\frac{y}{y_0} = e^{kt} = 9$ at $t = 18$.

y_0

$\therefore y_0 = 50$ — i

$y_0 = 150$ — ii

$\therefore y = 50e^{kt}$ — iii

$y = 150e^{kt}$ — iv

$\therefore 3 = e^{kt}$

$\ln 3 = \ln e^{k(9)}$

$\ln 3 = .k9.$

$k = \frac{\ln 3}{9}$

$k = 0.122$

$9 = e^{kt}$

$\ln 9 = \ln e^{k(18)}$

$\ln 9 = k(18)$

$k = \frac{\ln 9}{18}$

$k = 0.122.$

$\therefore y = 50e^{0.122t}$ — v

$y = 150e^{0.122t}$ — vi