

from the text, including direct

$g = 2$

then

$\frac{dx}{dt} = \frac{6}{x}$

and

thus

$\ln x = 6t + C_1$

$x = e^{6t+C_1}$

$x = e^{6t} \cdot e^{C_1}$

$x = C_2 e^{6t}$

where C_2 is a constant.

for $t = 0$

$x = C_2 e^0$

$x = C_2$

for $t = 1$

$x = C_2 e^6$

$x = 2e^6$

$C_2 = 2e^{-6}$

$x = 2e^{-6} e^6$

$x = 2e^0$

$x = 2$

