

Solve the ordinary differential equation $y' = 2 + \sqrt{y - 2x + 3}$. [99 清大動機 1a]

[解] 令 $u = y - 2x + 3 \Rightarrow u' = y' - 2 \Rightarrow y' = u' + 2$

$$\text{原式} \Rightarrow u' + 2 = 2 + \sqrt{u} \Rightarrow \frac{du}{dx} = \sqrt{u} \Rightarrow \frac{du}{\sqrt{u}} = dx \Rightarrow \int \frac{du}{\sqrt{u}} = \int dx + C$$

$$2\sqrt{u} = x + C \Rightarrow 4u = (x + C)^2 \Rightarrow 4(y - 2x + 3) = (x + C)^2$$



南臺科技大學

Southern Taiwan University of Science and Technology