① $y = \frac{t^3 - t^2}{2} - 2t - 4$ $\frac{dy}{dt} = 3t^2 - t - 2$

at Stationary point, $dy/dx = 0$, ∴ $3t^2 - t - 2 = 0$
Using quadratic formular $t = 1$ or $-2/3$
at $t = 1$, $y = 3(1)^2 - 1 - 2 = 0$ At $t = -2/3$, $y = 3(\frac{-2}{3} \times \frac{-2}{2}) + 2/3 - 2$
$= 0$

∴ the Stationary Point Co-ordinates are $(1, 0)$ and $(-2/3, 0)$
$\frac{d^2y}{dt} = 6t - 1$

at $t = 1$ $\frac{d^2y}{dt^2} = 6(1) - 1 = 5$

at $t = -2/3$ $= \frac{d^2y}{dt^2} = 6(\frac{-2}{3}) - 1 = -5$

$\frac{d^2y}{dt^2} > 0$ ∴ we have a ~~minimum point~~

$\frac{d^2y}{dt^2} < 0$ ∴ we have a minimum point

2.) $2y^2 - 5x^4 - 2 - 7y^3 = 0$
$4y\, dy/dx - 20x^3 - 21y^2\, dy/dx = 0$
$(4y - 21y^2) \frac{dy}{dx} = 20x^3$

$dy/dx = \frac{20x^3}{4y - 21y^2}$

3.) $4x^2 + 2xy^3 - 5y^2 = 0$
$8x + 6xy^2\, dy/dx + 2y^3 - 10y\, dy/dx = 0$
$(6xy^2 - 10y)\, dy/dx = -8x - 2y^3$
$\frac{dy}{dx} = \frac{-\cancel{2}(4x + y^3)}{-\cancel{2}(-3xy^2 + 5y)} = \frac{4x + y^3}{-3xy^2 + 5y}$

at $x = 1, y = 2$, $\frac{dy}{dx} = \frac{4(1) + (2)3}{-3(1)(2)^2 + 5(2)}$ $= \frac{4+8}{-3(4)+10}$

$= \frac{12}{-12+10}$ $\frac{12}{-2}$ $= \underline{\underline{-6}}$