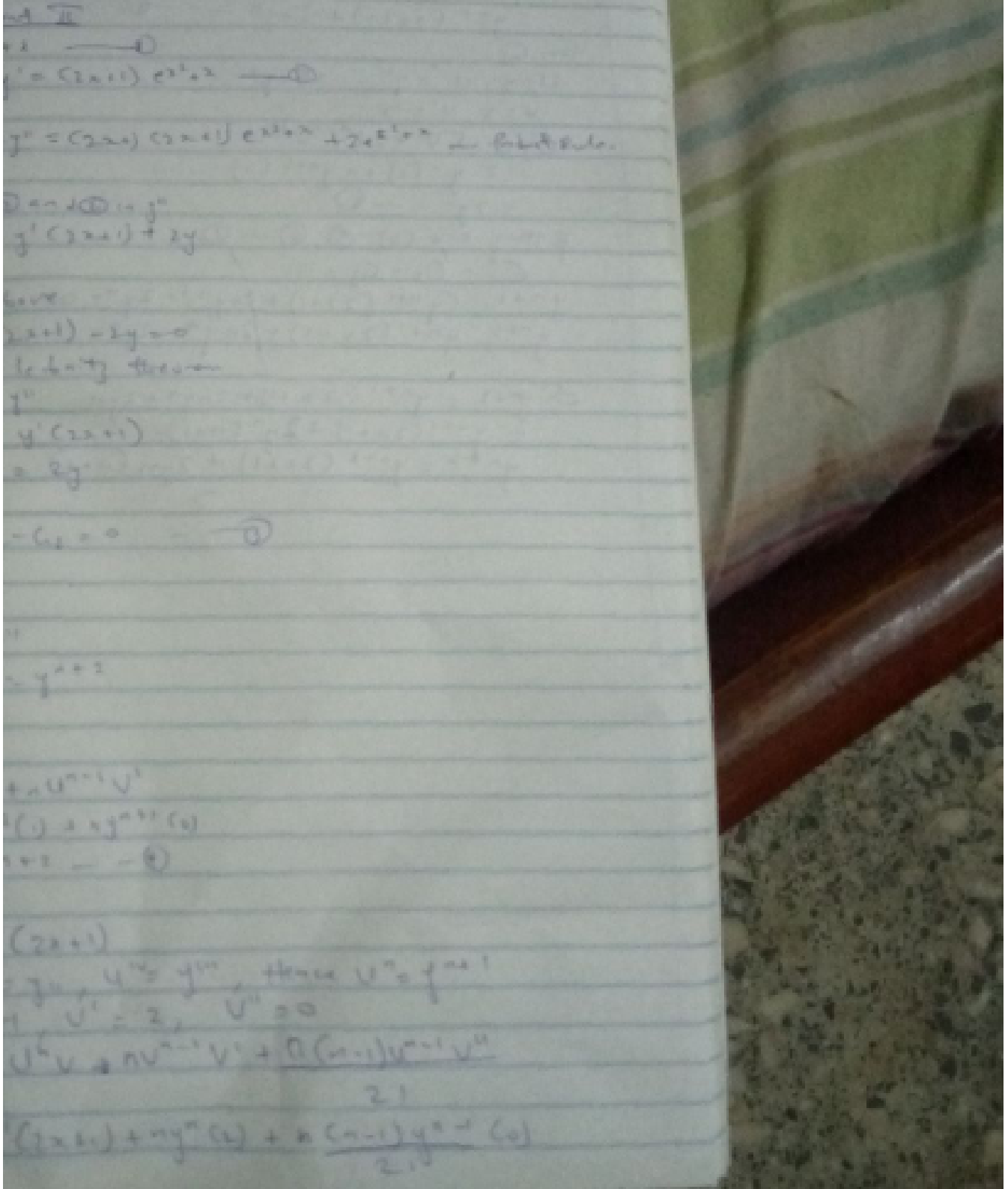

$= y^{n+1}(2x+1) + 2ny^n$ ——— ⑤

For C_3

$u = y,\ u' = y', \ldots\ u^n = y^n$

$v = 2,\ v' = 0$

$C_3 = u^n v + n v^{n-1} v'$

$= y^n (2) + n y^{n-1} (0)$

$= 2y^n$ ——— ⑥

Putting eq (4), ⑤, ⑥ in ⑦

$C_1 - C_2 - C_3 = 0$

$y^{n+2} - (y^{n+1}(2x+1) + 2ny^n) - 2y^n = 0$

$y^{n+2} - y^{n+1}(2x+1) - 2ny^n - 2y^n = 0$

$\Rightarrow y^{n+2} = y^{n+1}(2x+1) + 2ny^n + 2y^n$

$= y^{n+1}(2x+1) + 2y^n(n+1)$