

$$ii) \int_0^3 \frac{z}{(z+1)^{3/2}} dz$$

Substitute $z+1 = u$ ✓

Then $dz = du$ and $z = u-1$

$$z=3 \Rightarrow u=4$$
 ✓

$$z=0 \Rightarrow u=1$$
 ✓

$$\int_0^3 \frac{z}{(z+1)^{3/2}} dz = \int_1^4 \frac{u-1}{u^{3/2}} du$$

$$= \int_1^4 \left(\frac{u}{u^{3/2}} - \frac{1}{u^{3/2}} \right) du$$

$$= \int_1^4 \left(u^{-1/2} - u^{-3/2} \right) du$$
 ✓

$$= \left[2u^{1/2} + 2u^{-1/2} \right]_1^4$$
 ✓

$$= 2\sqrt{4} + \frac{2}{\sqrt{4}} - 2\sqrt{1} - \frac{2}{\sqrt{1}} = 4 + 1 - 2 - 2 = 1.$$
 ✓

4/4

Paul Well done just a slight error. However

please note I will take marks off next time
you do not include the division signs

I presume that you just forgot the 2nd part of 1(u

A very good result 22/25.

John G