You try it! Evaluate the definite integral.

$$\int_0^1 \frac{v^3+1}{\sqrt{v^4+4v+4}}\,dv$$

Option 2
keep u

$u = v^4+4v+4$

$du = (4v^3+4)\cdot dv$

$\frac{du}{4} = \frac{4(v^3+1)\cdot dv}{4}$

$du = (v^3+1)\cdot dv$

$v=1 \Rightarrow u = v^4+4v+4 = 1+4+4=9$

$v=0 \Rightarrow u = 0+0+4 = 4$

$$\int_4^9 \frac{du/4}{\sqrt{u}} = \int_4^9 \frac{1}{4}\cdot u^{-1/2}\cdot du = \frac{1}{4}\cdot\frac{u^{1/2}}{1/2}\Bigg|_4^9 = \frac{1}{2}\sqrt{u}\Bigg|_4^9 = \frac{1}{2}\cdot\sqrt{9}-\frac{1}{2}\cdot\sqrt{4} = \frac{3}{2}-\frac{2}{2} = \frac{1}{2}$$