Quiz 3

December 6, 2022

Name: ——————————————————————   Student No.: ——————————————————————

1. (30 %) Find the value of the constant α for which the integral $\displaystyle\int_0^\infty \left(\frac{1}{\sqrt{s^2+4}} - \frac{\alpha}{s+2} \right) ds$ converges. Evaluate the integral for this value of α.

2. (20 %) $\displaystyle\int_0^1 \frac{t^{1/2}}{1+t^{3/4}}\, dt$

3. (40 %) Evaluate $\displaystyle\int \frac{u^3 - 2u^2 + u - 1}{u(u^2+1)^2}\, du.$

4. (30 %) Evaluate $\displaystyle\int v^3 \sqrt{4+v^2}\, dv.$