

Ph1105 Problem Sheet D

1. Find the following integrals

(i) $\int_0^{\frac{\pi}{4}} \tan^3 x \sec^2 x dx$

(ii) $\int_0^{\frac{\pi}{2}} \cos^3 x \sin^2 x dx$

(iii) $\int_1^2 x\sqrt{x-1} dx$

(iv) $\int_0^{\frac{\pi}{3}} \frac{\sin x}{\cos^2 x} dx.$

2. Evaluate each of the following integrals

(i) $\int_0^8 x\sqrt{1+x} dx$

(ii) $\int_1^3 \frac{x+2}{\sqrt{x^2+4x+7}} dx$

(iii) $\int_{\pi^2}^{4\pi^2} \frac{\sin \sqrt{x}}{\sqrt{x}} dx.$

3. Evaluate the integral in each of the following cases

(i) $\int_0^e \frac{dx}{x+e}$

(ii) $\int_1^2 \frac{5x^4}{x^5+1} dx$

(iii) $\int_2^4 \frac{(\ln x)^2}{x} dx.$