1. Compute!

a) $\int_0^1 \frac{t}{(1+2t)^2}dt$

b) $\int_0^{\frac{\pi}{2}} \sin 2t \cos 3t \, dt$

c) $\int_0^{\frac{\pi}{3}} \sin^3 t \, dt$

d) $\int_0^{\pi} \sin^2 t \cos^2 t \, dt$

e) $\int_0^{\frac{\pi}{2}} \sin^3 2t \cos^2 2t \, dt$

f) $\int_0^{\frac{\pi}{3}} \frac{1}{\cos t}dt$

g) $\int_e^{e^2} \frac{1}{t \ln t}dt$

h) $\int_1^3 \frac{1}{t\sqrt{1+t}}dt$

i) $\int_0^1 (4-t^2)^{\frac{3}{2}}dt$

j) $\int_0^{\frac{\pi}{2}} e^{3t} \sin 2t \, dt$

k) $\int_0^{\frac{\pi}{2}} e^{2t} \cos 4t \, dt$

l) $\int_1^e t^5 \ln t \, dt$

m) $\int_0^{\frac{\pi}{4}} t^2 \cos t \, dt$

n) $\int_0^1 t \arcsin t \, dt$

o) $\int_0^{\frac{1}{2}} t \arccos 2t \, dt$

p) $\int_0^1 \frac{1}{\sqrt{2-t^2}}dt$

q) $\int_0^{\frac{\pi}{4}} \frac{1}{\cos^3 t}dt$

r) $\int_0^1 \frac{1}{\sqrt{2+t^2}}dt$

s) $\int_0^1 \sqrt{2t-t^2}dt$

t) $\int_0^2 t\sqrt{4t-t^2}dt$

u) $\int_0^3 \frac{\sqrt{6t-t^2}}{t}dt$

v) $\int_0^1 t^5\sqrt{1+t^2}dt$

w) $\int_1^{\sqrt{3}} \frac{1}{t\sqrt{1+t^2}}dt$

x) $\int_2^{2\sqrt{3}} \frac{1}{t^2\sqrt{4+t^2}}dt$

y) $\int_{\frac{1}{2}}^{\frac{\sqrt{3}}{2}} \frac{1}{t^3\sqrt{1+4t^2}}dt$

z) $\int_{\frac{1}{\sqrt{3}}}^{\sqrt{3}} \frac{1}{\sqrt{(1+t^2)^3}}dt$