

MATHEMATICS 201-203-RE

Integral Calculus

Martin Huard

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IX - Rationalizing Substitutions (v -subs)

1. Evaluate the indefinite integral.

a) $\int \frac{1}{1-\sqrt{x}} dx$

c) $\int \frac{1-\sqrt{x}}{1+\sqrt[4]{x}} dx$

e) $\int x^3 \sqrt{2x^2-1} dx$

g) $\int \frac{1}{x(1-\sqrt[4]{x})} dx$

i) $\int \frac{2x-1}{\sqrt{5x+2}} dx$

k) $\int \frac{1}{x^{\frac{1}{2}} - x^{\frac{3}{4}}} dx$

b) $\int \frac{1}{1+\sqrt[3]{x}} dx$

d) $\int \frac{1}{x\sqrt{4-3x}} dx$

f) $\int x\sqrt[3]{3x+1} dx$

h) $\int \frac{1}{\sqrt{1+\sqrt{x}}} dx$

j) $\int \frac{\sqrt[4]{x}}{\sqrt{x+\sqrt[3]{x}}} dx$

l) $\int \frac{\sqrt{x+1}-1}{\sqrt{x+1}+1} dx$

2. Evaluate the definite integral.

a) $\int_1^4 x\sqrt{x-1} dx$

c) $\int_{-3}^{-1} \frac{x^2}{\sqrt{1-x}} dx$

e) $\int_0^1 \frac{\sqrt{x}}{1+\sqrt[3]{x}} dx$

b) $\int_1^9 \frac{4-\sqrt{x}}{1+x} dx$

d) $\int_{\ln 3}^{\ln 15} \frac{1}{\sqrt{1+e^x}} dx$

f) $\int_2^6 \frac{2x^2}{(4x+1)^{\frac{5}{2}}} dx$

