Problems

Problem B.1 Compute the indefinite integrals:

a) $\int (3t^2 - 12t)\,dt$ b) $\int (2e^t - t)\,dt$ c) $\int t\sqrt{t}\,dt$

d) $\int \frac{1}{t^3}\,dt$ e) $\int (t-1)^2\,dt$

Problem B.2 Compute the indefinite integral $\int \frac{t^3 - t^2 + 1}{t}\,dt$.

Problem B.3 Compute the indefinite integrals:

a) $\int t\ln(t)\,dt$ b) $\int te^t\,dt$ c) $\int t^2 e^t\,dt$

d) $\int \frac{\ln(t)}{t^2}\,dt$ e) $\int \sqrt{t}\ln(t)\,dt$

Problem B.4 Use substitution to compute the indefinite integral

$$\int \frac{\ln(t)}{t}\,dt$$

Problem B.5 Compute the integral $\int e^{1-t}\,dt$.

Problem B.6 Compute the integral when a, b are constants with $a \neq 0$:

$$\int \frac{1}{at+b}\,dt$$

Problem B.7 Compute the indefinite integrals:

a) $\int 3t\sqrt{t^2+1}\,dt$ b) $\int \frac{t}{t^2-1}\,dt$

c) $\int 5t(t^2-1)^3\,dt$ d) $\int \frac{2t+3}{t^2+3t+2}\,dt$

Problem B.8 Compute the indefinite integrals:

a) $\int te^{t^2}\,dt$ b) $\int t^3 e^{t^2}\,dt$ c) $\int e^{\sqrt{t}}\,dt$

d) $\int \sqrt{t}\,e^{\sqrt{t}}\,dt$ e) $\int \frac{2e^t}{e^t + e^{-t}}\,dt$

Problem B.9 Use polynomial division to compute the integral:

$$\int \frac{t^2 - 3t + 7}{t - 4}\, dt$$

Problem B.10 Compute the indefinite integrals:

a) $\int \frac{t^2 - 3}{t + 4}\, dt$

b) $\int \frac{t + 1}{t^2 + 2t + 4}\, dt$

c) $\int \frac{t}{t^2 - 4}\, dt$

d) $\int \frac{3}{t(3 - t)}\, dt$