

Veiledningsoppgaver

Oppgave 1.

Regn ut disse ubestemte integralene:

$$\text{a) } \int \frac{4}{4-x} dx \quad \text{b) } \int \frac{4}{4-x^2} dx \quad \text{c) } \int \frac{4x}{4-x^2} dx \quad \text{d) } \int \frac{x^2}{4-x^2} dx$$

Oppgave 2.

Regn ut disse ubestemte integralene:

$$\begin{aligned} \text{a) } \int \frac{1}{1-x^2} dx & \quad \text{b) } \int \frac{2x}{1-x^2} dx & \quad \text{c) } \int \frac{x^2}{1-x^2} dx & \quad \text{d) } \int \frac{x^2-2x+1}{1-x^2} dx \\ \text{e) } \int \frac{1}{(1-x)^2} dx & \quad \text{f) } \int \frac{2x}{(1-x)^2} dx & \quad \text{g) } \int \frac{x^2}{(1-x)^2} dx & \quad \text{h) } \int \frac{x^2-2x+1}{(1-x)^2} dx \end{aligned}$$

Oppgave 3.

Løs de bestemte integralene:

$$\begin{aligned} \text{a) } \int_0^1 x dx & \quad \text{b) } \int_0^1 x^2 dx & \quad \text{c) } \int_0^1 x^3 dx & \quad \text{d) } \int_0^1 e^x dx & \quad \text{e) } \int_0^1 (e^x + e^{-x}) dx \\ \text{f) } \int_{-1}^1 x dx & \quad \text{g) } \int_{-1}^1 x^2 dx & \quad \text{h) } \int_{-1}^1 x^3 dx & \quad \text{i) } \int_{-1}^1 e^x dx & \quad \text{j) } \int_{-1}^1 (e^x + e^{-x}) dx \end{aligned}$$

Oppgave 4.

Løs de bestemte integralene:

$$\begin{aligned} \text{a) } \int_0^1 x e^x dx & \quad \text{b) } \int_0^1 x \ln(x^2+1) dx & \quad \text{c) } \int_0^1 \frac{1}{x^2+5x+6} dx & \quad \text{d) } \int_0^1 \frac{1}{x^2+4x+4} dx \\ \text{e) } \int_{-1}^1 x e^x dx & \quad \text{f) } \int_{-1}^1 x \ln(x^2+1) dx & \quad \text{g) } \int_{-1}^1 \frac{1}{x^2+5x+6} dx & \quad \text{h) } \int_{-1}^1 \frac{1}{x^2+4x+4} dx \end{aligned}$$

Oppgave 5.

Eksamen MET1180 (Desember 2015) Oppgave 2abc

Regn ut disse ubestemte integralene:

$$\text{a) } \int x e^{1-x^2} dx \quad \text{b) } \int x \ln(1-x) dx \quad \text{c) } \int \frac{x^3+x^2-2x-6}{x^2-1} dx$$

Oppgave 6.

Eksamen MET1180 (Mai 2016) Oppgave 3abc

Regn ut disse ubestemte integralene:

$$\text{a) } \int \frac{\ln x + 1}{x^2} dx \quad \text{b) } \int x^3 \sqrt{x^2+4} dx \quad \text{c) } \int \frac{x^2}{x^2+5x+4} dx$$

Oppgave 7.

Regn ut disse ubestemte integralene:

$$\text{a) } \int 2x^3 e^{-x^2} dx \quad \text{b) } \int \sqrt{x} e^{\sqrt{x}} dx \quad \text{c) } \int \frac{\sqrt{x}+1}{1-\sqrt{x}} dx$$

Oppgaver fra læreboken

Læreboken [E]: Eriksen, *Matematikk for økonomi og finans*

Oppgaveboken [O]: Eriksen, *Matematikk for økonomi og finans - Oppgaver og Løsningsforslag*

Oppgaver: [E] 5.5.1 - 5.5.6, 5.6.1 - 5.6.2

Fullstendig løsning: Se [O] Kap 5.5

Eksamensoppgaver Se [Oppgaveark 27](#)

Svar på veiledningsoppgaver

Oppgave 1.

a) $-4 \ln |4 - x| + \mathcal{C}$

b) $\ln |2 + x| - \ln |2 - x| + \mathcal{C}$

c) $-2 \ln |2 - x| - 2 \ln |2 + x| + \mathcal{C}$

d) $-x + \ln |2 + x| - \ln |2 - x| + \mathcal{C}$

Oppgave 2.

a) $\frac{1}{2} \ln \left| \frac{1+x}{1-x} \right| + \mathcal{C}$

b) $-\ln |1 - x^2| + \mathcal{C}$

c) $-x + \frac{1}{2} \ln \left| \frac{1+x}{1-x} \right| + \mathcal{C}$

d) $-x + \ln \left| \frac{1+x}{1-x} \right| + \ln |1 - x^2| + \mathcal{C}$

e) $\frac{1}{1-x} + \mathcal{C}$

f) $2 \ln |1 - x| + \frac{2}{1-x} + \mathcal{C}$

g) $x + 2 \ln |1 - x| + \frac{1}{1-x} + \mathcal{C}$

h) $x + \mathcal{C}$

Oppgave 3.

a) $1/2$

b) $1/3$

c) $1/4$

d) $e - 1$

e) $e - 1/e$

f) 0

g) $2/3$

h) 0

i) $e - 1/e$

j) $2(e - 1/e)$

Oppgave 4.

a) 1

b) $\ln(2) - 1/2$

c) $2 \ln(3) - 3 \ln(2)$

d) $1/6$

e) $2/e$

f) 0

g) $\ln(3) - \ln(2)$

h) $2/3$

Oppgave 5.

a) $-\frac{1}{2}e^{1-x^2} + \mathcal{C}$

b) $\frac{1}{2}x^2 \ln(1-x) - \frac{1}{2}x - \frac{1}{4}x^2 - \frac{1}{2} \ln(1-x) + \mathcal{C}$

c) $\frac{1}{2}x^2 + x - 3 \ln |x - 1| + 2 \ln |x + 1| + \mathcal{C}$

Oppgave 6.

a) $-\frac{1}{x}(\ln x + 2) + \mathcal{C}$

b) $\frac{1}{5}(x^2 + 4)^{5/2} - \frac{4}{3}(x^2 + 4)^{3/2} + \mathcal{C}$

c) $x - \frac{16}{3} \ln |x + 4| + \frac{1}{3} \ln |x + 1| + \mathcal{C}$

Oppgave 7.

a) $-x^2 e^{-x^2} - e^{-x^2} + \mathcal{C}$

b) $2xe^{\sqrt{x}} - 4\sqrt{x}e^{\sqrt{x}} + 4e^{\sqrt{x}} + \mathcal{C}$

c) $5 - 4\sqrt{x} - x - 4 \ln |1 - \sqrt{x}| + \mathcal{C}$