Test Forkurs Matematikk OsloMet

2. mars 2020

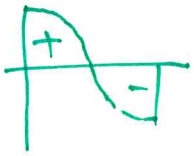
Regn uten bruk av hjelpemiddel

Benytt fundamentalteoremet i kalkulus til å evalere følgende integraler hvis det er mulig.

$$\int_{-3}^{5} 3/2 - x\,\mathrm{d}x = \frac{3}{2}x - \frac{x^2}{2}\Big|_{-3}^{5} = \frac{1}{2}\left[3(5-(-3) - (5^2-(-3)^2)\right] = \frac{1}{2}\left[3\cdot 8 - (25-9)\right] = \frac{1}{2}\left[3\cdot 8 - 2\cdot 8\right] = \underline{4}$$

$$\int_0^2 3x^2 - 2x + 3\,\mathrm{d}x = x^3 - x^2 + 3x\Big|_0^2$$
$$= 2^3 - 2^2 + 3\cdot 2 = 8 - 4 + 6 = \underline{10}$$

$$\int_0^2 7e^{-x}\,\mathrm{d}x = -7e^{-x}\Big|_0^2 = 7(e^0 - e^{-2})$$
$$= \underline{7\left(1 - \frac{1}{e^2}\right)}$$



$$\int_0^{\pi} 4\cos(x)\,\mathrm{d}x = 4\sin(x)\Big|_0^{\pi} = 4(\sin\pi - \sin 0)$$
$$= 0$$

$$\int_{-1}^{1} \frac{1}{x^4}\,\mathrm{d}x$$ ikke definert

polynomdivisjon

$$\int_0^3 \frac{x}{x+1}\,\mathrm{d}x = \int_0^3 1 - \frac{1}{x+1}\,\mathrm{d}x$$

$$= x - \ln(x+1)\Big|_0^3$$

$$= 3 - \ln(4) \sim 1{,}6137\ldots$$