



Norges teknisk–naturvitenskapelige
universitet
Institutt for matematiske fag

Fasit auditorieøving 8
for
TMA4100
Uke 40, 2007.

1 a) $\frac{16}{15}, \quad \left(\int_{-1}^1 [x^4 - (2x^2 - 1)] dx \right)$

b) $\frac{16}{3}, \quad \left(x = y^2 \text{ og } x = \frac{1}{2}y^2 + 2, \int_{-2}^2 [(\frac{1}{2}y^2 + 2) - y^2] dx \right)$

2 a) 2, $(u = \sin x, du = \cos x dx)$

b) 2, $(u = 2x + 1, du = 2 dx)$

3 a) $F'(x) = 2\sqrt{1 + 8x^3}, \quad (F(x) = \int_1^u f(t) dt \text{ der } u = 2x)$

b) $F'(x) = -\sin x^2, \quad (\int_x^a f(t) dt = -\int_a^x f(t) dt)$

4 a) $A = 32, \quad \left(A = 6 \int_0^4 \sqrt{4 - x} dx, u = 4 - x \right)$

b) $\bar{y} = 8, \quad \left(\bar{y} = \frac{1}{4} \int_0^4 f(x) dx \right)$

5 $L = 98, \quad \left(L = \int_0^4 3x\sqrt{x^2 + 9} dx, u = x^2 + 9 \right)$

6 3, $(\text{L'Hôpital- og fundamentalsetningen})$

7 a) $(x^2 + 1) \arctan x - x + C, \quad \left(\frac{x^2}{1+x^2} = 1 - \frac{1}{1+x^2} \right)$

b) $\arcsin \ln x + C, \quad (u = \ln x)$