ARK 2

setter inn punktet $(4,12)$:

$12 = -\frac{3}{2}\cdot 4 + b$

$12 = -6 + b$

$18 = b$

$\underline{\underline{y = -\frac{3}{2}x + 18}}$

eller bruk ett-punkts-formelen

$y - y_1 = a(x - x_1)$

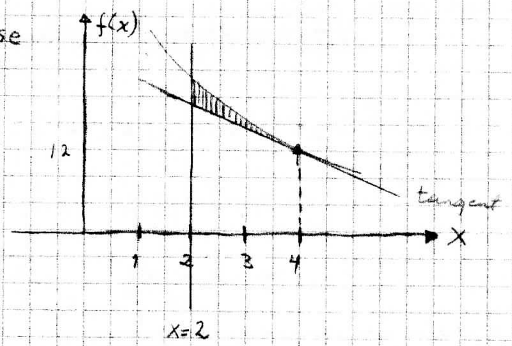
$y - 12 = -\frac{3}{2}(x - 4)$

$y - 12 = -\frac{3}{2}x + 6$

$y = -\frac{3}{2}x + 18$

$f(x) = \frac{24}{\sqrt{x}} \qquad x>0$

Enkel skisse



$A = \int_2^4 \left(f(x) - y\right) dx$

$= \int_2^4 \left(\frac{24}{\sqrt{x}} - \left(-\frac{3}{2}x + 18\right)\right) dx$

$= \int_2^4 \left(24x^{-\frac{1}{2}} + \frac{3}{2}x - 18\right) dx$

$= \left[24 \cdot \frac{1}{-\frac{1}{2}+1} x^{-\frac{1}{2}+1} + \frac{3}{2}\cdot\frac{1}{2}x^2 - 18x\right]_2^4$

$= \left[24 \cdot \frac{1}{\frac{1}{2}} x^{\frac{1}{2}} + \frac{3}{4}x^2 - 18x\right]^4$

bruk

$\left(\sqrt{x}\right)' = \frac{1}{2\sqrt{x}}$

$\left(2\sqrt{x}\right)' = \frac{1}{\sqrt{x}}$

eller

$\frac{24}{\sqrt{x}} = 24x^{-\frac{1}{2}}$

$A = \left[48\sqrt{x} + \frac{3}{4}x^2 - 18x\right]_2^4$

$A = 48\sqrt{4} + \frac{3}{4}\cdot 4^2 - 18\cdot 4 - \left(48\sqrt{2} + \frac{3}{4}\cdot 2^2 - 18\cdot 2\right)$

$= 48\cdot 2 + 3\cdot 4 - 72 - 48\sqrt{2} - 3 + 36$

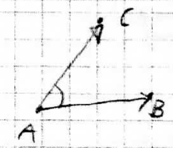
$= 96 + 12 - 72 - 3 + 36 - 48\sqrt{2}$

$\underline{\underline{A = 69 - 48\sqrt{2}}}$

---

g) $A(1,1,1) \quad B(3,3,2) \quad C(2,1,2)$

$\angle BAC$



$\vec{AB} = [3-1, 3-1, 2-1]$

$\vec{AB} = [2,2,1]$

$\vec{AC} = [2-1, 1-1, 2-1]$

$\vec{AC} = [1,0,1]$

$\vec{AB}\cdot\vec{AC} = |\vec{AB}|\cdot|\vec{AC}|\cdot\cos\angle BAC$

$\cos\angle BAC = \frac{\vec{AB}\cdot\vec{AC}}{|\vec{AB}|\cdot|\vec{AC}|}$

$\cos\angle BAC = \frac{[2,2,1]\cdot[1,0,1]}{\sqrt{2^2+2^2+1}\cdot\sqrt{1^2+0^2+1^2}}$

$\cos\angle BAC = \frac{2+0+1}{\sqrt{9}\cdot\sqrt{2}} = \frac{3}{3\sqrt{2}} = \frac{1}{\sqrt{2}}$

$= \frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\underline{\underline{\angle BAC = 45^\circ}}$

---

h) $y' + (\cos x)y = 0 \quad \Big| \cdot e^{\sin x} \qquad e^{\int \cos x\,dx} = e^{\sin x}$

$y'e^{\sin x} + \cos x\, e^{\sin x} y = 0$

$\left[y e^{\sin x}\right]' = 0 \qquad$ integrerer

$y e^{\sin x} = \int 0\,dx$