

$$= \frac{1}{2} x^2 + \int x y^2 dy = \frac{x^2}{2} + x \int y^2 dy =$$

$$= \frac{x^2}{2} + \frac{x y^3}{3}$$

$$6 \int \cos^3 u + 3 \cos^2 u + 3 \cos u + 1 du =$$

$$= \frac{1}{16} \left(\sin(u) - \frac{\sin^3 u}{3} + \frac{\sin^2 u}{4} + \frac{u}{2} \right)$$

$$\cdot 3 \sin(u) + 4 \Big) + \left(\frac{3 \sin(2u)}{64} - \frac{\sin^3(u)}{48} + \right.$$

$$\left. + \frac{\sin(u)}{4} + \frac{5u}{32} + C = \frac{3 \sin(4x)}{64} - \frac{\sin(2x)}{48} + \frac{\sin(2x)}{4} + \frac{5x}{16} + C \right.$$

6. Trapezium

$$y = 5x - x^2$$

$$y = 5 - x$$

$$S = \int_a^b (f_2(x) - f_1(x)) dx$$

$$S = \int_1^5 (-5 + 6x - x^2) dx = \frac{32}{3}$$

7. Trapezium

$$y = \frac{1}{n} \sin x$$

$$\text{von } x = \frac{\pi}{3} \text{ zu } x = \frac{\pi}{2}$$