

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

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

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

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

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

$$+ \frac{\sin(u)}{4} + \frac{5u}{32} + C = \frac{3 \sin(4x)}{64} - \frac{\sin(4x)^3}{48} +$$

$$+ \frac{\sin(2x)}{4} + \frac{5x}{16} + C$$

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

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

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

~~$$\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sqrt{1 + \tan^2 x} dx =$$~~

$$\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sqrt{1 + \left(\frac{dx}{dy} \log(\sin x) \right)^2} dx =$$

$$= \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sqrt{1 + \left(\frac{\cos x}{\sin x} \right)^2} dx = \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sqrt{1 + \frac{1}{\tan^2 x}} dx =$$

$$= \frac{\log \frac{3}{2}}{2} + \frac{\log 2}{2} + \left(\frac{\pi}{3} \right)$$

2. Трансформация

$$y = x, \quad y = x^2, \quad V_{og} = ?$$

$$V_{og} = \pi \int_0^1 x_2^2(y) - x_1^2(y) dy$$

$$x_2^2(y) = y$$

$$x_1(y) = y$$

$$x^2(y) = y$$

$$x = x \Rightarrow x_1 = 0$$