

$$+G(f_2)) = 10 \frac{5}{6}$$

$$5) y = x^2 - 9x + 5$$

$$y = 2x + 15$$

$$x^2 - 8x + 15 = -2x + 15$$

$$x^2 - 8x + 2x = 0$$

$$x(x-6) = 0$$

$$x = 0$$

$$x = 6$$

$$\int_0^6 x^2 - 8x + 15 - (-2x + 15) dx = \int_0^6 x^2 - 6x dx = \frac{x^3}{3} - 3x^2 \Big|_0^6 = \frac{6^3}{3} - 3 \cdot 6^2 - (0 - 0) = 36$$

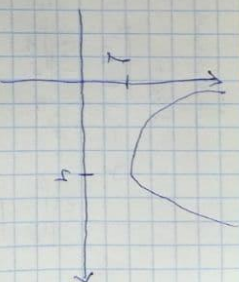
$$1) \int_0^1 (2x + \sqrt{x}) dx = \int_0^1 2x + x^{\frac{1}{2}} dx = \frac{2x^2}{2} + \frac{2x^{\frac{3}{2}}}{\frac{3}{2}} \Big|_0^1 = 1 + \frac{4}{3} = \frac{7}{3}$$

$$\frac{2 \cdot 3 \sqrt{16}}{8} + 12 = \frac{100}{3}$$

$$2) \int_0^{\frac{\pi}{2}} \frac{\cos x}{\sqrt{\sin x + 1}} dx = \int_0^{\frac{\pi}{2}} \frac{\cos x}{\sqrt{\sin x + 1}} dx = \frac{\sin x + 1}{\sqrt{\sin x + 1}} = \sqrt{\sin x + 1} \Big|_0^{\frac{\pi}{2}} = \sqrt{2} - 1$$

$$3) \int_{\frac{1}{2}}^1 \frac{1}{\sqrt{1-x}} dx = \int_{\frac{1}{2}}^1 \frac{1}{\sqrt{1-x}} dx = -\sqrt{1-x} \Big|_{\frac{1}{2}}^1 = 0 - (-\sqrt{1-\frac{1}{2}}) = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}}$$

$$\frac{\arcsin \frac{3x}{2}}{2} \Big|_{\frac{1}{2}}^{\frac{\sqrt{3}}{2}} = \frac{\arcsin \frac{3 \cdot \frac{\sqrt{3}}{2}}{2}}{2} - \frac{\arcsin \frac{3 \cdot \frac{1}{2}}{2}}{2} = \frac{\arcsin \frac{3\sqrt{3}}{4}}{2} - \frac{\arcsin \frac{3}{4}}{2} = \frac{\pi}{18}$$



$$4) y = -x^2 + 2x + 3$$

$$y = 0$$

$$-x^2 + 2x + 3 = 0$$

$$x^2 - 2x - 3 = 0$$

$$x_1 = -1$$

$$x_2 = 3$$

$$5) y = -x^2 + 10x - 16$$

$$y = x + 2$$

$$\frac{1}{2} \cdot \frac{6^3}{3} = 36$$

$$-x^2 + 2x - 16 = 0$$

$$x_1 = 3$$

$$x_2 = 6$$

$$\int_3^6 (-x^2 + 10x - 16 - (x + 2)) dx = \int_3^6 (-x^2 + 9x - 18) dx = -\frac{x^3}{3} + \frac{9x^2}{2} - 18x \Big|_3^6 = -\frac{6^3}{3} + \frac{9 \cdot 6^2}{2} - 18 \cdot 6 - (-\frac{3^3}{3} + \frac{9 \cdot 3^2}{2} - 18 \cdot 3) = 36$$

$$\int_3^6 (-x^2 + 10x - 16 - (x + 2)) dx = \int_3^6 (-x^2 + 9x - 18) dx = -\frac{x^3}{3} + \frac{9x^2}{2} - 18x \Big|_3^6 = -\frac{6^3}{3} + \frac{9 \cdot 6^2}{2} - 18 \cdot 6 - (-\frac{3^3}{3} + \frac{9 \cdot 3^2}{2} - 18 \cdot 3) = 36$$

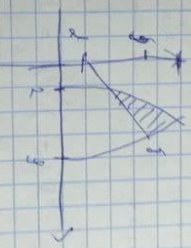
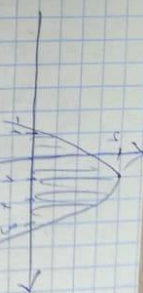
$$y = x^2 - 1$$

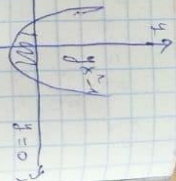
$$y = 0$$

$$x^2 - 1 = 0$$

$$x = 1$$

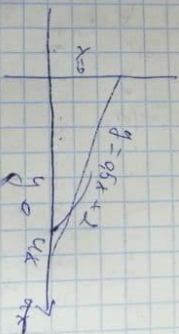
$$x = -1$$



$$y=0, \\ V = \int_0^1 \int_0^1 dx dy = 1$$


1.84

$$x+2y-y=0 \\ y=0 \\ x=0 \\ y=-0.5x$$



$$V = \int_0^1 \int_0^{0.5x} (-0.5x+2) dx dy = \int_0^1 \int_0^{0.5x} (-0.5x+2) dx dy = \pi/4 (4x-x^2) + \frac{x^3}{6} \Big|_0^1 = \pi \cdot \frac{16}{3} = \frac{16\pi}{3}$$

1.100

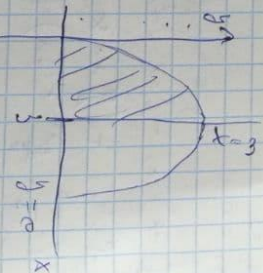
$$3) y=-x^2+5x \quad y=0 \quad x=3$$

$$x_1=0 \quad x_2=3$$

$$V = \pi \int_0^3 (-x^2+5x)^2 dx =$$

$$\pi \int_0^3 (25x^2 - 10x^3 + x^4) dx =$$

$$\frac{25x^3}{3} - \frac{10x^4}{4} + \frac{x^5}{5} \Big|_0^3 = \pi \cdot \frac{25 \cdot 27}{3} - \frac{5 \cdot 81}{2} + \frac{243}{5} = \frac{54\pi}{5} \approx 304.44$$



$$4) y=4(x+1) \quad y=x+2, \quad x^2-2x-y \\ x-y+2=0 \\ \sqrt{4x+5}=x+2 \\ 4x+5=x^2+4x+4 \\ x^2-2x=0 \\ x_1=2 \\ x_2=0$$



$$V = \pi \int_0^2 (\sqrt{4x+5} - x - 2)^2 dx = \pi \int_0^2 \sqrt{x+2} \cdot x - 2 dx = \pi \left(\frac{2}{3} \sqrt{x+2} - \frac{2}{3} \right) \Big|_0^2 = \frac{8\pi}{3}$$