

## NOTEIKTAIS INTEGRĀLIS UN TĀ PIELIETOJUMI,

1. *uzdevumā* aprēķināt noteikto integrāli.

2. *uzdevumā* aprēķināt laukumu figūrai, kuru ierobežo doto funkciju grafiki.

### 1. variants.

1. a)  $\int_0^{\frac{\pi}{4}} x \cos 2x dx$

b)  $\int_0^3 \frac{x dx}{\sqrt{x+1}}$

2. a)  $y = \frac{1}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 3$

b)  $y = 2x - x^2 - 1$ ,  $y = -x - 1$

c)  $y = \sqrt{x}$ ,  $y = \frac{3-x}{2}$ ,  $y = 0$

### 2. variants.

1. a)  $\int_0^{\frac{\pi}{3}} x \sin 3x dx$

b)  $\int_1^2 x \cdot \sqrt[3]{x-1} dx$

2. a)  $y = \frac{1}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$

b)  $y = x^2 + 6x + 7$ ,  $y = x + 3$

c)  $y = (x-1)^3$ ,  $y = 3-x$ ,  $y = 0$

### 3. variants.

1. a)  $\int_0^{\frac{\pi}{4}} x \sin 4x dx$

b)  $\int_3^{10} \frac{(x-1) dx}{\sqrt[3]{x-2}}$

2. a)  $y = x^2$ ,  $y = 0$ ,  $x = 1$ ,  $x = 3$

b)  $y = 4x - x^2 - 5$ ,  $y = x - 5$

c)  $y = \frac{2}{x}$ ,  $y = 2x$ ,  $y = 0$ ,  $x = 4$

### 4. variants.

1. a)  $\int_1^e \ln x dx$

b)  $\int_{-1}^{14} (x-1) \cdot \sqrt[4]{x+2} dx$

2. a)  $y = x^3$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$

b)  $y = (x-1)^2$ ,  $y = x+1$

c)  $y = 2^x$ ,  $y = 3-x$ ,  $x = 0$ ,  $y = 0$

### 5. variants.

1. a)  $\int_1^e \frac{\ln x}{x^3} dx$

b)  $\int_0^8 (x+2)\sqrt{x+1} dx$

2. a)  $y = 2^x$ ,  $y = 0$ ,  $x = 1$ ,  $x = 3$

b)  $y = 6x - x^2 - 13$ ,  $y = -x - 3$

c)  $y = \sqrt[3]{x+1}$ ,  $y = 1 - x$ ,  $y = 0$

### 6. variants.

1. a)  $\int_0^{\frac{\pi}{3}} x \cos 3x dx$

b)  $\int_2^{17} \frac{xdx}{\sqrt[4]{x-1}}$

2. a)  $y = 3^x$ ,  $y = 0$ ,  $x = 0$ ,  $x = 2$

b)  $y = x^2 + 1$ ,  $y = x + 3$

c)  $y = \sqrt{4-x}$ ,  $y = 2 + 2x$ ,  $y = 0$

### 7. variants.

1. a)  $\int_0^{\pi} x \sin \frac{x}{2} dx$

b)  $\int_{-3}^5 (x+1) \cdot \sqrt[3]{x+3} dx$

2. a)  $y = \frac{2}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 4$

b)  $y = 2x + 1 - x^2$ ,  $y = 1 - x$

c)  $y = -x^3$ ,  $y = x + 2$ ,  $y = 0$

### 8. variants.

1. a)  $\int_1^e \frac{\ln x}{x^4} dx$

b)  $\int_4^{12} \frac{(x+2)dx}{\sqrt{x-3}}$

2. a)  $y = x^2$ ,  $y = 0$ ,  $x = 0$ ,  $x = 2$

b)  $y = x^2 + 4x + 5$ ,  $y = 1 - x$

c)  $y = \frac{1}{x}$ ,  $y = -x$ ,  $y = 0$ ,  $x = -2$

### 9. variants.

1. a)  $\int_0^1 x e^{2x} dx$

b)  $\int_0^7 \frac{xdx}{\sqrt[3]{x+1}}$

2. a)  $y = \frac{4}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$

b)  $y = 8x - x^2 - 15$ ,  $y = x - 5$

c)  $y = \sqrt{x+2}$ ,  $y = 6 - 2x$ ,  $y = 0$

**10. variants.**

1. a)  $\int_1^e \frac{\ln x}{x^2} dx$

b)  $\int_4^7 x\sqrt{x-3} dx$

2. a)  $y = x^3, y = 0, x = 0, x = 2$

b)  $y = x^2 - 2x + 2, y = x + 2$

c)  $y = 3^x - 1, y = 3 - x, y = 0$

**11. variants.**

1. a)  $\int_0^{\pi} x \sin \frac{x}{4} dx$

b)  $\int_2^3 x \cdot \sqrt[4]{x-2} dx$

2. a)  $y = (x+2)^2, y = 0, x = -1, x = 1$

b)  $y = 1 - x^2, y = x - 1$

c)  $y = \sqrt{x-1}, y = 2 - \frac{x}{2}, y = 0$

**12. variants.**

1. a)  $\int_0^{\pi} x \sin \frac{x}{3} dx$

b)  $\int_{-1}^{14} \frac{(x+3)dx}{\sqrt[4]{x+2}}$

2. a)  $y = \sqrt{x}, y = 0, x = 1, x = 4$

b)  $y = x^2 + 2x + 3, y = x + 5$

c)  $y = (x+1)^3, y = 1 - x, y = 0$

**13. variants.**

1. a)  $\int_0^2 x e^{\frac{x}{2}} dx$

b)  $\int_{-2}^5 \frac{(x+1)dx}{\sqrt[3]{x+3}}$

2. a)  $y = \sqrt[3]{x}, y = 0, x = 1, x = 8$

b)  $y = 6x - x^2 - 8, y = x - 4$

c)  $y = \frac{4}{x}, y = 2x + 2, y = 0, x = 4$

**14. variants.**

1. a)  $\int_0^{\pi} x \cos \frac{x}{2} dx$

b)  $\int_2^5 x^2 \cdot \sqrt{x-1} dx$

2. a)  $y = (x-1)^2, y = 0, x = 1, x = 3$

b)  $y = x^2 - 4x + 3, y = x - 1$

c)  $y = 3^x, y = 4 - x, x = 0, y = 0$

### 15. variants.

1. a)  $\int_0^{\frac{\pi}{4}} x \sin 2x dx$

b)  $\int_3^4 (x-2) \cdot \sqrt[4]{x-3} dx$

2. a)  $y = 4 - x^2$ ,  $y = 0$ ,  $x = 0$ ,  $x = 2$

b)  $y = 2x - x^2 - 4$ ,  $y = -x - 4$

c)  $y = \sqrt[3]{x-1}$ ,  $y = 3 - x$ ,  $y = 0$

### 16. variants.

1. a)  $\int_0^3 x e^{\frac{x}{3}} dx$

b)  $\int_{-4}^4 \frac{dx}{\sqrt{x+5} + 2}$

2. a)  $y = e^x$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$

b)  $y = (x+1)^2$ ,  $y = x+3$

c)  $y = \sqrt{3-x}$ ,  $y = 2x+4$ ,  $y = 0$

### 17. variants.

1. a)  $\int_0^{\frac{\pi}{6}} x \sin 6x dx$

b)  $\int_{-3}^4 x \cdot \sqrt[3]{x+4} dx$

2. a)  $y = \sqrt{x+1}$ ,  $y = 0$ ,  $x = 0$ ,  $x = 3$

b)  $y = -x^2 - 4x - 5$ ,  $y = -x - 5$

c)  $y = -\frac{1}{x}$ ,  $y = -4x$ ,  $x = -2$ ,  $y = 0$

### 18. variants.

1. a)  $\int_1^e x \ln x dx$

b)  $\int_5^8 \frac{dx}{\sqrt{x-4} + 3}$

2. a)  $y = \sqrt{x-2}$ ,  $y = 0$ ,  $x = 2$ ,  $x = 6$

b)  $y = x^2 + 6x + 11$ ,  $y = 1 - x$

c)  $y = \frac{1}{x}$ ,  $y = x$ ,  $x = 3$ ,  $y = 0$

### 19. variants.

1. a)  $\int_1^e x^4 \ln x dx$

b)  $\int_8^{15} \frac{dx}{\sqrt{x+1} - 2}$

2. a)  $y = x^3 + 1$ ,  $y = 0$ ,  $x = 0$ ,  $x = 1$

b)  $y = 2x - x^2 - 3$ ,  $y = x - 5$

c)  $y = \sqrt{x+3}$ ,  $y = 4 - 2x$ ,  $y = 0$

**20. variants.**

1. a)  $\int_0^1 x e^{3x} dx$

b)  $\int_1^4 \frac{dx}{\sqrt{x+1}}$

2. a)  $y = 1 + \sqrt{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 4$

b)  $y = x^2 - 1$ ,  $y = x + 1$

c)  $y = 4^x - 1$ ,  $y = 4 - x$ ,  $y = 0$

**21. variants.**

1. a)  $\int_0^{\frac{\pi}{4}} x \sin 8x dx$

b)  $\int_{-1}^2 x^2 \cdot \sqrt{x+2} dx$

2. a)  $y = x^2 + 1$ ,  $y = 0$ ,  $x = 0$ ,  $x = 2$

b)  $y = x^2 + 2x + 2$ ,  $y = x + 4$

c)  $y = \sqrt{x+2}$ ,  $y = -x$ ,  $y = 0$

**22. variants.**

1. a)  $\int_1^e x^2 \ln x dx$

b)  $\int_4^7 \frac{dx}{\sqrt{x-3}+4}$

2. a)  $y = \frac{3}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 3$

b)  $y = -(x-2)^2$ ,  $y = x - 4$

c)  $y = (x-2)^3$ ,  $y = 4 - x$ ,  $y = 0$

**23. variants.**

1. a)  $\int_0^{\pi} x \cos \frac{x}{3} dx$

b)  $\int_5^{10} \frac{dx}{\sqrt{x-1}+6}$

2. a)  $y = \sqrt{x-1}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 5$

b)  $y = x^2 - 6x + 8$ ,  $y = x - 2$

c)  $y = \frac{2}{x}$ ,  $y = x + 1$ ,  $y = 0$ ,  $x = 2$

**24. variants.**

1. a)  $\int_1^e x^3 \ln x dx$

b)  $\int_3^{10} \frac{(x+4)dx}{\sqrt{x+6}}$

2. a)  $y = (x+1)^2$ ,  $y = 0$ ,  $x = -1$ ,  $x = 2$

b)  $y = -x^2 - 4x - 1$ ,  $y = -x - 1$

c)  $y = 4^x$ ,  $y = 5 - x$ ,  $x = 0$ ,  $y = 0$

**25. variants.**

1. a)  $\int_0^{\pi} x \cos \frac{x}{4} dx$

b)  $\int_{-1}^4 \frac{xdx}{\sqrt{x+5}}$

2. a)  $y = 4^x$ ,  $y = 0$ ,  $x = 0$ ,  $x = 1$

b)  $y = (x+2)^2$ ,  $y = x+4$

c)  $y = \sqrt[3]{x+2}$ ,  $y = -x$ ,  $y = 0$

**26. variants.**

1. a)  $\int_0^{\frac{\pi}{4}} x \cos 4x dx$

b)  $\int_4^9 \frac{dx}{\sqrt{x+3}}$

2. a)  $y = \frac{5}{x}$ ,  $y = 0$ ,  $x = 1$ ,  $x = 5$

b)  $y = 6x - x^2 - 7$ ,  $y = 3 - x$

c)  $y = \sqrt{5-x}$ ,  $y = 2x$ ,  $y = 0$

**27. variants.**

1. a)  $\int_0^{\frac{\pi}{6}} x \cos 6x dx$

b)  $\int_2^7 \frac{dx}{\sqrt{x+2}-1}$

2. a)  $y = \sqrt[3]{x}$ ,  $y = 0$ ,  $x = 0$ ,  $x = 8$

b)  $y = x^2 + 4x + 7$ ,  $y = 3 - x$

c)  $y = 5^x - 1$ ,  $y = 5 - x$ ,  $y = 0$

**28. variants.**

1. a)  $\int_0^1 x e^{4x} dx$

b)  $\int_4^{16} \frac{dx}{\sqrt{x}-1}$

2. a)  $y = x^3 - 1$ ,  $y = 0$ ,  $x = 1$ ,  $x = 2$

b)  $y = 4 - x^2$ ,  $y = x + 2$

c)  $y = \sqrt{x+4}$ ,  $y = 2 - 2x$ ,  $y = 0$