

## ДОМАШНА РАБОТА №5

1) Пресметнете интеграла:

$$1.1. \int 4x^3 + 6x^2 - 8x + 3 dx;$$

$$1.2. \int 8x^7 - 5x^4 - 8x^3 - 3 dx;$$

$$1.3. \int 5x^4 - 10x^2 - 12x - 4 dx;$$

$$1.4. \int 9x^8 - 6x^5 - 6x^2 - 7 dx;$$

$$1.5. \int 6x^5 + 8x^3 - 10x - 2 dx;$$

$$1.6. \int 16x^7 - 4x^3 + 2x - 10 dx;$$

$$1.7. \int 7x^6 + 10x^4 - 8x^3 + 5 dx;$$

$$1.8. \int 10x^9 + 6x^5 - 12x^2 + 7 dx;$$

$$1.9. \int 10x^4 - 12x^2 + 2x + 1 dx;$$

$$1.10. \int 12x^3 - 3x^2 - 4x - 15 dx.$$

2) Пресметнете интеграла:

$$2.1. \int \sqrt[3]{x^5} + \frac{6}{\sqrt{x}} - \frac{4}{x^3} - \sqrt[4]{x} dx;$$

$$2.2. \int \sqrt[4]{x^5} - \frac{6}{x} + \frac{5}{x^3} - 3\sqrt[3]{x} dx;$$

$$2.3. \int \sqrt[3]{x^2} + \frac{10}{x} - \frac{5}{x^6} - \sqrt[6]{x} dx;$$

$$2.4. \int \sqrt[3]{x^7} + \frac{10}{x^6} - \frac{3}{\sqrt{x^3}} - 6\sqrt[5]{x} dx;$$

$$2.5. \int \sqrt[5]{x^2} - \frac{6}{x^2} - \frac{4}{\sqrt{x}} - \sqrt[3]{x} dx;$$

$$2.6.; \int \sqrt[4]{x^7} - \frac{4}{x^3} - \frac{6}{\sqrt[5]{x}} - 6\sqrt{x^3} dx;$$

$$2.7. \int \sqrt[3]{x} - \frac{6}{x} - \frac{7}{\sqrt[4]{x^3}} - \sqrt{x^3} dx;$$

$$2.8. \int \sqrt[3]{x^{11}} - \frac{4}{x} + \frac{10}{\sqrt[3]{x^2}} - \sqrt{x^5} dx;$$

$$2.9. \int \sqrt[7]{x^5} - \frac{9}{x} + \frac{12}{\sqrt[3]{x}} - \sqrt{x^7} dx;$$

$$2.10. \int \sqrt[5]{x^7} - \frac{8}{x} + \frac{7}{\sqrt[6]{x}} - \sqrt{x^{13}} dx.$$

3) Пресметнете интеграла:

$$3.1. \int 3^x + \frac{6}{\cos^2 x} - \frac{4}{1-x^2} + 5 \sin x dx;$$

$$3.2. \int 6^x - \frac{4}{\cos^2 x} + \frac{4}{\sqrt{1-x^2}} - 3 \sin x dx;$$

$$3.3. \int 2^x + \frac{4}{\sin^2 x} - \frac{3}{1+x^2} + 7 \cos x dx;$$

$$3.4. \int 8^x - \frac{4}{\sin^2 x} - \frac{2}{\sqrt{1+x^2}} + 5 \cos x dx;$$

$$3.5. \int 7^x + \frac{4}{\cos^2 x} - \frac{2}{x^2-1} + 7e^x dx;$$

$$3.6. \int 10^x - \frac{2}{\cos^2 x} - \frac{6}{\sqrt{x^2-1}} - 8e^x dx;$$

$$3.7. \int 4^x - \frac{3}{\sin^2 x} - \frac{5}{\sqrt{x^2-1}} + 10e^x dx;$$

$$3.8. \int 2^x - \frac{6}{\cos^2 x} + \frac{4}{1-x^2} - 8 \sin x dx;$$

$$3.9. \int 5^x - \frac{2}{\cos^2 x} + \frac{3}{\sqrt{1-x^2}} - \sin x dx;$$

$$3.10. \int 7^x - \frac{2}{\sin^2 x} + \frac{4}{1+x^2} - 6 \cos x dx.$$

4) Пресметнете интеграла:

$$4.1. \int \frac{6}{\sqrt{4-x^2}} - \frac{3}{x^2+3} dx;$$

$$4.2. \int \frac{4}{\sqrt{x^2+2}} + \frac{6}{9-x^2} dx;$$

$$4.3. \int \frac{2}{\sqrt{3-x^2}} - \frac{4}{x^2+9} dx;$$

$$4.4. \int \frac{10}{\sqrt{5+x^2}} - \frac{7}{49+x^2} dx;$$

$$4.5. \int \frac{8}{\sqrt{x^2-16}} - \frac{6}{x^2-2} dx;$$

$$4.6. \int \frac{10}{\sqrt{25+x^2}} + \frac{11}{11+x^2} dx;$$

$$4.7. \int \frac{5}{\sqrt{x^2-5}} - \frac{8}{x^2-16} dx;$$

$$4.8. \int \frac{10}{\sqrt{5-x^2}} - \frac{12}{x^2-36} dx;$$

$$4.9. \int \frac{8}{\sqrt{x^2+4}} + \frac{7}{7-x^2} dx;$$

$$4.10. \int \frac{8}{\sqrt{64-x^2}} + \frac{5}{x^2-5} dx.$$

5) Пресметнете интеграла:

$$5.1. \int \sin(2x+4) dx;$$

$$5.2. \int \cos(3x-7) dx;$$

$$5.3. \int e^{-2x+4} dx;$$

$$5.4. \int 3^{-4x-1} dx;$$

$$5.5. \int \frac{1}{\sin^2(3x-4)} dx;$$

$$5.6. \int \frac{1}{\cos^2(5x+3)} dx;$$

$$5.7. \int \sin \frac{3x}{2} dx;$$

$$5.8. \int \cos \frac{5x}{4} dx;$$

$$5.9. \int \frac{1}{\sin^2 \frac{x}{3}} dx;$$

$$5.10. \int \frac{1}{\cos^2 \frac{x}{5}} dx.$$

6) Пресметнете интеграла:

$$6.1. \int (3x-7)^6 dx;$$

$$6.2. \int (9-4x)^5 dx;$$

$$6.3. \int \sqrt{2x+8} dx;$$

$$6.4. \int \sqrt[4]{3-5x} dx;$$

$$6.5. \int \frac{1}{(2x-3)^6} dx;$$

$$6.6. \int \frac{1}{(5-4x)^7} dx;$$

$$6.7. \int \frac{1}{6x+5} dx;$$

$$6.8. \int \frac{1}{5-x} dx;$$

$$6.9. \int \frac{1}{\sqrt[3]{2x-7}} dx;$$

$$6.10. \int \frac{1}{\sqrt[5]{6-7x}} dx.$$

7) Пресметнете интеграла:

$$7.1. \int \frac{1}{4x+1} - \frac{1}{4x^2+1} dx;$$

$$7.2. \int \frac{1}{\sqrt{1-4x^2}} - \frac{1}{\sqrt{1-4x}} dx;$$

$$7.3. \int \frac{1}{9x-1} - \frac{1}{9x^2-1} dx;$$

$$7.4. \int \frac{1}{\sqrt{1+9x^2}} - \frac{1}{\sqrt{1+9x}} dx;$$

$$7.5. \int \frac{1}{\sqrt{4x^2-9}} - \frac{1}{\sqrt{4x-9}} dx;$$

$$7.6. \int \frac{1}{\sqrt{9x^2+4}} - \frac{1}{\sqrt{9x+4}} dx;$$

$$7.7. \int \frac{1}{\sqrt{25-9x^2}} - \frac{1}{\sqrt{25-9x}} dx;$$

$$7.8. \int \frac{1}{\sqrt{49+4x^2}} - \frac{1}{\sqrt{49+4x}} dx;$$

$$7.9. \int \frac{1}{9x-16} - \frac{1}{9x^2-16} dx;$$

$$7.10. \int \frac{1}{4x+25} - \frac{1}{4x^2+25} dx.$$

8) Пресметнете интеграла:

$$8.1. \int \sqrt{x^3} - \frac{3}{x^2} + \frac{3}{\cos^2 2x} - \frac{4}{4-x^2} dx;$$

$$8.2. \int \sqrt[4]{x^7} - \frac{3}{\sqrt{x}} + \cos 3x - \frac{3}{1+4x^2} dx;$$

$$8.3. \int \sqrt{x^5} - \frac{5}{x} + \frac{4}{\sin^2 2x} - \frac{6}{9+x^2} dx;$$

$$8.4. \int \sqrt[3]{x} - \frac{7}{x} + \frac{6}{\cos^2 3x} - \frac{6}{9+x^2} dx;$$

$$8.5. \int \sqrt{2x} - \frac{6}{x^3} + e^{-3x} - \frac{3}{\sqrt{9+x^2}} dx;$$

$$8.6. \int \sqrt[4]{x^7} - \frac{4}{\sqrt{2x}} + \cos 2x - \frac{6}{4+x^2} dx;$$

$$8.7. \int \sqrt{3x} - \frac{6}{\sqrt[3]{x}} + e^{2x} - \frac{3}{\sqrt{4-x^2}} dx;$$

$$8.8. \int \sqrt{3x} - \frac{6}{x^4} + e^{-4x} - \frac{6}{\sqrt{1+4x^2}} dx;$$

$$8.9. \int \sqrt[3]{x^5} - \frac{6}{\sqrt[4]{x}} + \sin 2x - \frac{3}{\sqrt{x^2-5}} dx;$$

$$8.10. \int \sqrt[4]{x^3} - \frac{4}{\sqrt[3]{x}} + \sin 3x - \frac{3}{\sqrt{x^2+4}} dx.$$

9) Пресметнете интеграла:

$$9.1. \int x \sin(x^2+3) dx;$$

$$9.2. \int x \cos(3x^2+2) dx;$$

$$9.3. \int x e^{-x^2+4} dx;$$

$$9.4. \int x e^{3x^2-5} dx;$$

$$9.5. \int \frac{x}{\sin^2(2x^2-1)} dx;$$

$$9.6. \int \frac{x}{\cos^2(4x^2+3)} dx;$$

$$9.7. \int \frac{x}{x^4+1} dx;$$

$$9.8. \int \frac{x}{x^4-1} dx;$$

$$9.9. \int \frac{x}{\sqrt{x^4+1}} dx;$$

$$9.10. \int \frac{x}{\sqrt{1-x^4}} dx.$$

10) Пресметнете интеграла:

$$10.1. \int \frac{2x+5}{x^2+1} dx;$$

$$10.2. \int \frac{4x-3}{x^2-1} dx;$$

$$10.3. \int \frac{4x-3}{x^2+4} dx;$$

$$10.4. \int \frac{6x+5}{x^2-4} dx;$$

$$10.5. \int \frac{6x+1}{x^2+9} dx;$$

$$10.6. \int \frac{2x+7}{x^2-9} dx;$$

$$10.7. \int \frac{4x-1}{x^2+16} dx;$$

$$10.8. \int \frac{6x+5}{x^2-16} dx;$$

$$10.9. \int \frac{8x-5}{x^2+25} dx;$$

$$10.10. \int \frac{8x+4}{x^2-25} dx.$$

11) Пресметнете интеграла:

$$11.1. \int \sin x \cos x dx;$$

$$11.2. \int \sin^3 x \cos x dx;$$

$$11.3. \int \sin x \cos^3 x dx;$$

$$11.4. \int \sin x \cos^2 x dx;$$

$$11.5. \int \frac{\sin x}{\cos^2 x} dx;$$

$$11.6. \int \frac{\cos x}{\sin^3 x} dx;$$

$$11.7. \int \frac{\sin x}{1+\cos x} dx;$$

$$11.8. \int \frac{\cos x}{1+\sin x} dx;$$

$$11.9. \int \frac{\sin x}{1+\cos^2 x} dx;$$

$$11.10. \int \frac{\cos x}{1+\sin^2 x} dx.$$

12) Пресметнете интеграла:

$$12.1. \int \frac{\ln x}{x} dx;$$

$$12.2. \int \frac{\ln^2 x}{x} dx;$$

$$12.3. \int \frac{dx}{x \ln x};$$

$$12.4. \int \frac{dx}{x \ln^2 x};$$

$$12.5. \int \frac{\operatorname{arctg} x}{x^2+1} dx;$$

$$12.6. \int \frac{\operatorname{arctg}^3 x}{x^2+1} dx;$$

$$12.7. \int \frac{\arcsin x}{\sqrt{1-x^2}} dx;$$

$$12.8. \int \frac{\arcsin^4 x}{\sqrt{1-x^2}} dx;$$

$$12.9. \int \frac{e^x}{1+e^{2x}} dx;$$

$$12.10. \int \frac{e^x}{4+e^x} dx.$$