ТЕМА 11. ОПРЕДЕЛЕННЫЙ ИНТЕГРАЛ

Задача 1. Найти определенный интеграл

1 $\int_{-2}^{0}(x^2+5x+6)\cos 2x\ dx$

2 $\int_{-2}^{0}(x^2-4)\cos 3x\ dx$

3 $\int_{-1}^{0}(x^2+4x+3)\cos x\ dx$

4 $\int_{-2}^{0}(x+2)^2\cos 3x\ dx$

5 $\int_{-4}^{0}(x^2+7x+12)\cos x\ dx$

6 $\int_{0}^{\pi}(2x^2+4x+7)\cos 2x\ dx$

7 $\int_{0}^{\pi}(9x^2+9x+11)\cos 3x\ dx$

8 $\int_{0}^{\pi}(8x^2+16x+17)\cos 4x\ dx$

9 $\int_{0}^{2\pi}(3x^2+5)\cos 2x\ dx$

10 $\int_{0}^{2\pi}(2x^2-15)\cos 3x\ dx$

11 $\int_{0}^{2\pi}(3-7x^2)\cos 2x\ dx$

12 $\int_{0}^{2\pi}(1-8x^2)\cos 4x\ dx$

13 $\int_{-1}^{0}(x^2+2x+1)\sin 3x\ dx$

14 $\int_{0}^{3}(x^2-3x)\sin 2x\ dx$

15 $\int_{0}^{\pi}(x^2-3x+2)\sin x\ dx$

16 $\int_{0}^{\frac{\pi}{2}}(x^2-5x+6)\sin 3x\ dx$

17 $\int_{-3}^{0}(x^2+6x+9)\sin 2x\ dx$

18 $\int_{0}^{\frac{\pi}{4}}(x^2+17{,}5)\sin 2x\ dx$

19 $\int_{0}^{\frac{\pi}{2}}(1-5x^2)\sin x\ dx$

20 $\int_{\frac{\pi}{4}}^{3}(3x-x^2)\sin 2x\ dx$

21 $\int_{1}^{2}x\cdot\ln^2 x\ dx$

22 $\int_{1}^{e^2}\frac{\ln^2 x}{\sqrt{x}}dx$

23 $\int_{1}^{8}\frac{\ln^2 x\ dx}{\sqrt[3]{x^2}}$

24 $\int_{0}^{1}(x+1)\ln^2(x+1)dx$

25 $\int_{2}^{3}(x-1)^3\ln^2(x-1)dx$

26 $\int_{-1}^{0}(x+2)^3\ln^2(x+2)dx$

27 $\int_{0}^{2}(x+1)^2\ln^2(x+1)dx$

28 $\int_{1}^{e}\sqrt{x}\ln^2 x\ dx$

29 $\int_{-1}^{1}x^2e^{-\frac{x}{2}}dx$

30 $\int_{0}^{1}x^2e^{3x}dx$

31 $\int_{-2}^{0}(x^2+2)e^{\frac{x}{2}}dx$

32 $\int_{0}^{\frac{\pi}{2}}(x^2-3x+2)\cos 2x\ dx$

33 $\int_{0}^{\pi}(x^2-1)\cos x\ dx$

34 $\int_{-\frac{\pi}{2}}^{0}(x^2-5x)\cos 2x\ dx$

35 $\int_{-\pi}^{0}(4-x^2)\cos 2x\ dx$

36 $\int_{0}^{2\pi}(3-2x-x^2)\cos 2x\ dx$

37 $\int_{0}^{\pi}(5x^2-4)\sin 2x\ dx$

38 $\int_{0}^{2\pi}(x^2-x-1)\sin 2x\ dx$

39 $\int_{-\pi}^{0}(x^2-4x-1)\sin 2x\ dx$

40 $\int_{-2\pi}^{0}(2x^2+3)\sin 2x\ dx$

41 $\int_{0}^{\pi}(3x^2+x-4)\sin 4x\ dx$

42 $\int_{0}^{\pi}(4-3x^2)\sin 2x\ dx$

43 $\int_{-\pi}^{0}(5x^2-1)\sin 2x\ dx$

44 $\int_{0}^{\frac{\pi}{2}}(3x^2-x-4)\cos 4x\ dx$

45 $\int_{0}^{4\pi}(x^2-5)\cos\frac{x}{2}dx$

46 $\int_{-2\pi}^{0}(4x^2-5)\cos x\ dx$

47 $\int_{0}^{4\pi}(3x^2-5x-6)\cos\frac{x}{4}dx$

48 $\int_{0}^{\pi}(5x^2-4)\sin x\ dx$

49 $\int_{-\pi}^{0}(x^2-4x+1)\sin 3x\ dx$

50 $\int_{0}^{2}(5x^2+3)e^{\frac{x}{2}}dx$

51 $\int_{-1}^{1}(x^2-1)e^x dx$

52 $\int_{3}^{0}(3-x^2)e^{\frac{x}{3}}dx$

53 $\int_{0}^{4}x^2e^{\frac{x}{8}}dx$

54 $\int_{0}^{2}x^2e^{\frac{x}{4}}dx$

55 $\int_{1}^{e}x^2\ln^2 x\ dx$

56 $\int_{1}^{e}x^3\ln^2 x\ dx$

57 $\int_{-1}^{0}(x+2)^3\ln^2(x+2)dx$

58 $\int_{-2}^{0}(x+3)\ln^2(x+3)dx$

59 $\int_{2}^{3}\frac{\ln^2(x-1)}{\sqrt{x-1}}dx$

60 $\int_{3}^{4}\frac{\ln^2(x-2)}{\sqrt{x-2}}dx$

Задача 2. Найти определенный интеграл

1 $\int_{e+1}^{e^2+1}\frac{1+\ln(x-1)}{x-1}dx$

2 $\int_{0}^{1}\frac{(x^2+1)dx}{(x^3+3x+1)^2}$

3 $\int_{0}^{1}\frac{4arctg\ x-x}{1+x^2}dx$

4 $\int_{0}^{2}\frac{x^3dx}{x^2+4}$

5 $\int_{\pi}^{2\pi}\frac{x+\cos x}{x^2+2\sin x}dx$

6 $\int_{0}^{\frac{\pi}{4}}\frac{2\cos x+3\sin x}{(2\sin x-3\cos x)^3}dx$

7 $\int_{0}^{0.5}\frac{8x-arctg2x}{1+4x^2}dx$

8 $\int_{1}^{4}\frac{\frac{1}{2\sqrt{x}}+1}{(\sqrt{x}+1)^2}dx$

9 $\int_{0}^{1}\frac{x\ dx}{x^4+1}$

10 $\int_{\sqrt{3}}^{\sqrt{8}}\frac{x+\frac{1}{x}}{\sqrt{x^2+1}}dx$

11 $\int_{\sqrt{3}}^{\sqrt{8}} \frac{x-\frac{1}{x}}{\sqrt{x^2+1}}\,dx$

12 $\int_{0}^{\sqrt{3}} \frac{arctgx+x}{1+x^2}\,dx$

13 $\int_{0}^{\sqrt{3}} \frac{x-(arctgx)^4}{1+x^2}\,dx$

14 $\int_{0}^{1} \frac{x^3 dx}{x^2+1}$

15 $\int_{0}^{\sin 1} \frac{(\arcsin x)^2+1}{\sqrt{1-x^2}}\,dx$

16 $\int_{1}^{3} \frac{1-\sqrt{x}}{\sqrt{x}(x+1)}\,dx$

17 $\int_{\sqrt{3}}^{\sqrt{8}} \frac{dx}{x\sqrt{x^2+1}}$

18 $\int_{1}^{e} \frac{1+\ln x}{x}\,dx$

19 $\int_{\sqrt{2}}^{2} \frac{dx}{x\sqrt{x^2-1}}$

20 $\int_{1}^{e} \frac{x^2+\ln x^2}{x}\,dx$

21 $\int_{0}^{1} \frac{x\ dx}{\sqrt{x^4+x^2+1}}$

22 $\int_{0}^{1} \frac{x^3 dx}{(x^2+1)^2}$

23 $\int_{0}^{\frac{\pi}{4}} tg\ \ x\cdot\ln\cos x\ \ dx$

24 $\int_{-1}^{0} \frac{tg(x+1)}{\cos^2(x+1)}\,dx$

25 $\int_{0}^{\frac{1}{\sqrt{2}}} \frac{(\arccos x)^3-1}{\sqrt{1-x^2}}\,dx$

26 $\int_{\pi}^{2\pi} \frac{1-\cos x}{(x-\sin x)^2}\,dx$

27 $\int_{0}^{\frac{\pi}{4}} \frac{\sin x-\cos x}{(\cos x+\sin x)^2}\,dx$

28 $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \frac{x\cos x+\sin x}{(x\sin x)^2}\,dx$

29 $\int_{0}^{1} \frac{x^3+x}{x^4+1}\,dx$

30 $\int_{\sqrt{2}}^{\sqrt{3}} \frac{x\ dx}{\sqrt{x^4-x^2-1}}$

31 $\int_{2}^{9} \frac{x\ dx}{\sqrt[3]{x-1}}$

32 $\int_{-\frac{\pi}{2}}^{-\frac{\pi}{4}} \frac{\cos x}{\sin^3 x}\,dx$

33 $\int_{0}^{\frac{\pi}{8}} \sin^3 4x\ dx$

34 $\int_{0}^{\frac{\pi}{4}} \frac{\sin x}{\cos^2 x}\,dx$

35 $\int_{0}^{\frac{\pi}{8}} \cos^3 2x\ dx$

36 $\int_{2}^{5} \frac{dx}{\sqrt{5+4x-x^2}}$

37 $\int_{0}^{1} \frac{x\ dx}{(x^2+2)^3}$

38 $\int_{0}^{1} \frac{x\ dx}{(x^2-2)^4}$

39 $\int_{0}^{1} \frac{e^x dx}{2e^x+3}$

40 $\int_{0}^{1} \frac{e^{2x} dx}{\sqrt{4-e^{2x}}}$

41 $\int_{1}^{e} \frac{\sin(\ln x)}{x}\,dx$

42 $\int_{0}^{\frac{\pi^2}{16}} \frac{tg\sqrt{x}}{\sqrt{x}}\,dx$

43 $\int_{1}^{e} \frac{\ln x\ dx}{x(\ln^2 x+1)}$

44 $\int_{\ln 2}^{2\ln 2} \frac{e^{3x} dx}{e^{3x}-1}$

45 $\int\limits_{e^{\sqrt{3}}}^{e^3} \frac{2\ln x\ dx}{x(\ln^4 x+2\ln^2 x+2)}$

46 $\int\limits_1^2 (2x-1)\sqrt{x^2-x+2}dx$

47 $\int\limits_1^9 x\ \sqrt[3]{1-x}dx$

48 $\int\limits_0^{\ln 2} e^x\sqrt{e^x-1}dx$

49 $\int\limits_{-2}^{-1} \frac{dx}{x\sqrt{x^2-1}}$

50 $\int\limits_0^{\frac{\pi}{4}} \frac{x^2}{x^2+9}dx$

51 $\int\limits_0^{\frac{\pi}{2}} \sin x\cdot\cos^5 x\ dx$

52 $\int\limits_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{\sqrt{\sin^2 x+4}}$

53 $\int\limits_0^{\frac{\pi}{8}} \frac{2tg2x-4}{\cos^2 2x}dx$

54 $\int\limits_1^3 x^3\sqrt{x^2-1}dx$

55 $\int\limits_0^{\frac{\pi}{3}} \cos^3 x\cdot\sin 2x\ dx$

56 $\int\limits_0^{\frac{\pi}{4}} \frac{tg\ x}{\cos^2 x\sqrt{4-tg^2 x}}dx$

57 $\int\limits_0^{\frac{\pi}{4}} \frac{\sqrt{tg^2 x+4}\cdot tg\ x}{\cos^2 x}dx$

58 $\int\limits_{-\frac{\sqrt{2}}{2}}^0 \frac{(\arccos x)^2-3x}{\sqrt{1-x^2}}dx$

59 $\int\limits_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{\cos^2 x-4}$

60 $\int\limits_0^1 \frac{x^3dx}{x^8-9}$

Задача 3. Найти определенный интеграл

1 $\int\limits_{\frac{\pi}{2}}^{2arctg2} \frac{dx}{\sin^2 x(1-\cos x)}$

2 $\int\limits_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{2+\cos x}$

3 $\int\limits_{\frac{\pi}{2}}^{2arctg2} \frac{dx}{\sin^2 x(1+\cos x)}$

4 $\int\limits_{2arctg\frac{1}{2}}^{\frac{\pi}{2}} \frac{\cos x\ dx}{(1-\cos x)^3}$

5 $\int\limits_0^{\frac{\pi}{2}} \frac{\cos x-\sin x}{(1+\sin x)^2}dx$

6 $\int\limits_{2arctg2}^{2arctg3} \frac{dx}{\cos x(1-\cos x)}$

7 $\int\limits_{2arctg\frac{1}{3}}^{2arctg\frac{1}{2}} \frac{dx}{\sin x(1-\sin x)}$

8 $\int\limits_{2arctg\frac{1}{2}}^{\frac{\pi}{2}} \frac{dx}{(1+\sin x-\cos x)^2}$

9 $\int\limits_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{5+4\cos x}$

10 $\int\limits_0^{\frac{2\pi}{3}} \frac{1+\sin x}{1+\cos x+\sin x}dx$

11 $\int\limits_{\frac{\pi}{3}}^{\frac{\pi}{2}} \frac{\cos x\ dx}{1+\sin x-\cos x}$

12 $\int\limits_0^{\frac{\pi}{2}} \frac{1+\cos x}{1+\cos x+\sin x}dx$

13 $\int\limits_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{1+\cos x+\sin x}$

14 $\int\limits_0^{2arctg\frac{1}{2}} \frac{1+\sin x}{(1-\sin x)^2}dx$

15 $\int_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{1+\cos x+\sin x}$

16 $\int_0^{2arctg\frac{1}{3}} \frac{\cos x\ dx}{(1+\cos x)(1-\sin x)}$

17 $\int_{-\frac{2\pi}{3}}^{0} \frac{\cos x\ dx}{1+\cos x-\sin x}$

18 $\int_{-\frac{\pi}{2}}^{0} \frac{\cos x\ dx}{(1+\cos x-\sin x)^2}$

19 $\int_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{(1+\cos x+\sin x)^2}$

20 $\int_0^{2arctg\frac{1}{2}} \frac{1-\sin x}{\cos x(1+\cos x)}dx$

21 $\int_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{(1+\sin x)^2}$

22 $\int_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{(1+\sin x+\cos x)^2}$

23 $\int_{-\frac{\pi}{2}}^{0} \frac{\sin x\ dx}{(1+\cos x-\sin x)^2}$

24 $\int_{-\frac{2\pi}{3}}^{0} \frac{\cos^2 x\ dx}{(1+\cos x-\sin x)^2}$

25 $\int_0^{\frac{\pi}{2}} \frac{\sin^2 x\ dx}{(1+\cos x+\sin x)^2}$

26 $\int_0^{\frac{2\pi}{3}} \frac{\cos^2 x\ dx}{(1+\cos x+\sin x)^2}$

27 $\int_{\frac{\pi}{2}}^{2arctg2} \frac{dx}{\sin x(1+\sin x)}$

28 $\int_0^{\frac{\pi}{2}} \frac{dx}{(1+\sin x+\cos x)^2}$

29 $\int_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{2+\sin x}$

30 $\int_0^{\frac{\pi}{4}} \frac{dx}{\cos x(1+\cos x)}$

31 $\int_0^{\frac{\pi}{2}} \frac{\sin x\ dx}{5+3\sin x}$

32 $\int_{\frac{\pi}{2}}^{2arctg3} \frac{dx}{\sin x(1-\cos x)}$

33 $\int_{2arctg\frac{1}{4}}^{\frac{\pi}{2}} \frac{2ctg\ x-4}{(2\sin x-\cos x)}dx$

34 $\int_0^{\frac{\pi}{2}} \frac{\cos x\ dx}{3+2\cos x}$

35 $\int_0^{arctg4} \frac{3+2tg\ x}{2\sin^2 x+3\cos^2 x-1}dx$

36 $\int_0^{\frac{\pi}{2}} \frac{dx}{5+4\cos x}$

37 $\int_{\frac{\pi}{4}}^{arctg3} \frac{4tg\ x-5}{1-2\sin 2x+4\cos^2 x}dx$

38 $\int_0^{\frac{\pi}{2}} \frac{dx}{1+\cos x+\sin x}$

39 $\int_0^{arctg\frac{1}{3}} \frac{8+tg\ x}{3\sin^2 x-2\cos^2 x-1}dx$

40 $\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \frac{dx}{1+\sin x-\cos x}$

41 $\int_0^{arctg\frac{1}{\sqrt{2}}} \frac{tg\ x+2}{\sin^2 x+2\cos^2 x-3}dx$

42 $\int_0^{\frac{\pi}{2}} \frac{1+\cos x}{(1+\cos x+\sin x)^2}dx$

43 $\int_0^{\frac{\pi}{2}} \frac{1+\cos x}{(1+\cos x-\sin x)^2}dx$

44 $\int_{-\frac{\pi}{2}}^{0} \frac{\sin x\ dx}{(1+\cos x-2\sin x)^2}$

45 $\int_{\frac{\pi}{2}}^{0} \frac{\sin x\ dx}{(1+\cos x+2\sin x)^2}$

46 $\int_0^{2arctg\frac{1}{2}} \frac{1-\cos x}{(1+\sin x)^2}dx$

47 $\int_0^{2arctg\frac{1}{3}} \frac{1-\cos x}{(1-\sin x)^2}\,dx$

48 $\int_{-arctg\frac{1}{3}}^{0} \frac{3tg\ x+1}{2\sin 2x-5\cos 2x+1}\,dx$

49 $\int_0^{2arctg\frac{1}{3}} \frac{2+\cos x}{(1+\cos x)(1-\sin x)}\,dx$

50 $\int_0^{2arctg\frac{1}{2}} \frac{2+\cos x}{(1+\cos x)(1+\sin x)}\,dx$

51 $\int_0^{\frac{\pi}{2}} \frac{1+\sin x}{(1+\cos x)(1-\sin x)}\,dx$

52 $\int_0^{\frac{\pi}{2}} \frac{1-\sin x}{(1+\cos x)(1+\sin x)}\,dx$

53 $\int_0^{\frac{\pi}{3}} \frac{tg^2 x}{4+3\cos 2x}\,dx$

54 $\int_0^{\frac{\pi}{3}} \frac{tg\ x\ dx}{3+2\cos 2x}$

55 $\int_0^{\frac{2\pi}{3}} \frac{dx}{3+2\sin x-\cos x}$

56 $\int_0^{\frac{2\pi}{3}} \frac{dx}{3-2\sin x+\cos x}$

57 $\int_0^{\frac{\pi}{4}} \frac{tg2x\ dx}{\cos^2 x(tg\ 2x+4)}$

58 $\int_0^{\frac{\pi}{2}} \frac{1+\cos x}{(1-\sin x)^2}\,dx$

59 $\int_0^{\frac{\pi}{2}} \frac{1+\cos x}{(1+\sin x)^2}\,dx$

60 $\int_0^{\frac{\pi}{2}} \frac{dx}{1-\sin x-\cos x}$

Задача 4. Найти определенный интеграл

1 $\int_{\frac{\pi}{2}}^{\pi} 2^8 \sin^8 x\ dx$

2 $\int_0^{\pi} 2^4 \sin^6 x\cdot\cos^2 x\ dx$

3 $\int_0^{2\pi} \sin^4 x\cdot\cos^4 x\ dx$

4 $\int_0^{2\pi} \sin^2 \frac{x}{4}\cdot\cos^6 \frac{x}{4}dx$

5 $\int_0^{\pi} 2^4 \cos^8 \frac{x}{2}dx$

6 $\int_{-\frac{\pi}{2}}^{0} 2^8 \sin^8 x\ dx$

7 $\int_{\frac{\pi}{2}}^{\pi} 2^8 \sin^6 x\cdot\cos^2 x\ dx$

8 $\int_0^{\pi} 2^4 \sin^4 x\cdot\cos^4 x\ dx$

9 $\int_0^{2\pi} \sin^2 x\cdot\cos^6 x\ dx$

10 $\int_0^{2\pi} \cos^8 \frac{x}{4}dx$

11 $\int_0^{\pi} 2^4 \sin^8 \frac{x}{2}dx$

12 $\int_{-\pi}^{0} 2^8 \sin^6 x\cdot\cos^2 x\ dx$

13 $\int_{\frac{\pi}{2}}^{\pi} 2^8 \sin^4 x\cdot\cos^4 x\ dx$

14 $\int_0^{\pi} 2^4 \sin^2 x\cdot\cos^6 x\ dx$

15 $\int_0^{2\pi} \cos^8 x\ dx$

16 $\int_0^{2\pi} \sin^8 \frac{x}{4}dx$

17 $\int_0^{\pi} 2^4 \sin^6 \frac{x}{2}\cdot\cos^2 \frac{x}{2}dx$

18 $\int_{-\frac{\pi}{2}}^{0} 2^8 \sin^4 x\cdot\cos^4 x\ dx$

19 $\int_{\frac{\pi}{2}}^{\pi} 2^8 \sin^2 x \cdot \cos^6 x \ dx$

20 $\int_{0}^{\pi} 2^4 \cos^8 x \ dx$

21 $\int_{0}^{2\pi} \sin^8 x \ dx$

22 $\int_{0}^{2\pi} \sin^6 \frac{x}{4} \cdot \cos^2 \frac{x}{4} dx$

23 $\int_{0}^{\pi} 2^4 \sin^4 \frac{x}{2} \cdot \cos^4 \frac{x}{2} dx$

24 $\int_{-\frac{\pi}{2}}^{0} 2^8 \sin^2 x \cdot \cos^6 x \ dx$

25 $\int_{\frac{\pi}{2}}^{\pi} 2^8 \cos^8 x \ dx$

26 $\int_{0}^{\pi} 2^4 \sin^8 x \ dx$

27 $\int_{0}^{2\pi} \sin^6 x \cdot \cos^2 x \ dx$

28 $\int_{0}^{2\pi} \sin^4 \frac{x}{4} \cdot \cos^4 \frac{x}{4} dx$

29 $\int_{0}^{\pi} 2^4 \sin^2 \frac{x}{2} \cdot \cos^6 \frac{x}{2} dx$

30 $\int_{-\frac{\pi}{2}}^{0} 2^8 \cos^8 x \ dx$

31 $\int_{0}^{2\pi} \sin^4 3x \cdot \cos^4 3x \ dx$

32 $\int_{\frac{\pi}{2}}^{\pi} 2^6 \sin^6 x \ dx$

33 $\int_{\frac{\pi}{2}}^{\pi} 2^6 \cos^6 x \ dx$

34 $\int_{0}^{\pi} \sin^2 x \cos^4 x \ dx$

35 $\int_{0}^{\pi} 2^4 \sin^6 \frac{x}{2} dx$

36 $\int_{0}^{\pi} 2^4 \cos^6 \frac{x}{2} dx$

37 $\int_{0}^{\pi} \sin^4 x \cos^2 x \ dx$

38 $\int_{0}^{2\pi} \sin^6 \frac{x}{4} dx$

39 $\int_{0}^{2\pi} \cos^6 \frac{x}{4} dx$

40 $\int_{0}^{\frac{\pi}{2}} \sin^4 x \cos^4 x \ dx$

41 $\int_{\pi}^{\frac{3}{2}\pi} \sin^6 x \ dx$

42 $\int_{\pi}^{\frac{3}{2}\pi} \cos^6 x \ dx$

43 $\int_{\frac{\pi}{2}}^{\frac{3}{2}\pi} \sin^2 x \cos^4 x \ dx$

44 $\int_{\frac{\pi}{2}}^{\frac{3}{2}\pi} \sin^4 x \cos^2 x \ dx$

45 $\int_{0}^{2\pi} 2^6 \sin^6 x \ dx$

46 $\int_{0}^{2\pi} 2^6 \cos^6 x \ dx$

47 $\int_{\frac{\pi}{2}}^{\frac{3}{2}\pi} \sin^4 x \cos^4 x \ dx$

48 $\int_{\pi}^{2\pi} 2^6 \sin^6 x \ dx$

49 $\int_{\pi}^{2\pi} 2^6 \cos^6 x \ dx$

50 $\int_{\pi}^{2\pi} \sin^2 x \cos^4 x \ dx$

51 $\int_{\pi}^{2\pi} \sin^4 x \cos^2 x \ dx$

52 $\int_{0}^{2\pi} 2^4 \sin^6 \frac{x}{2} dx$

53 $\int_0^{2\pi} 2^6 \cos^6 \frac{x}{2}\,dx$

54 $\int_0^{-2\pi} \sin^4 x \cos^4 x\ dx$

55 $\int_{2\pi}^{4\pi} \sin^6 \frac{x}{4}\,dx$

56 $\int_{2\pi}^{4\pi} \cos^6 \frac{x}{4}\,dx$

57 $\int_{\pi}^{2\pi} \sin^4 x \cos^4 x\ dx$

58 $\int_{\pi}^{\frac{3}{2}\pi} \sin^8 x\ dx$

59 $\int_{\pi}^{\frac{3}{2}\pi} \cos^8 x\ dx$

60 $\int_0^{2\pi} \sin^2 x \cos^4 x\ dx$

Задача 5. Найти определенный интеграл

1 $\int_0^{16} \sqrt{256-x^2}\ dx$

2 $\int_0^{1} x^2\sqrt{1-x^2}\ dx$

3 $\int_0^{5} \frac{dx}{(25+x^2)\sqrt{25+x^2}}$

4 $\int_0^{3} \frac{dx}{(9+x^2)^{\frac{3}{2}}}$

5 $\int_0^{\frac{\sqrt{5}}{2}} \frac{dx}{\sqrt{(5-x^2)^3}}$

6 $\int_1^{2} \frac{\sqrt{x^2-1}}{x^4}\,dx$

7 $\int_0^{\frac{\sqrt{2}}{2}} \frac{x^4 dx}{\sqrt{(1-x^2)^3}}$

8 $\int_0^{\sqrt{3}} \frac{dx}{\sqrt{(4-x^2)^3}}$

9 $\int_0^{1} \frac{x^4 dx}{(2-x^2)^{\frac{3}{2}}}$

10 $\int_0^{2} \frac{x^2 dx}{\sqrt{16-x^2}}$

11 $\int_0^{2} \sqrt{4-x^2}\ dx$

12 $\int_0^{4} \frac{dx}{(16+x^2)^{\frac{3}{2}}}$

13 $\int_0^{4} x^2\sqrt{16-x^2}\ dx$

14 $\int_0^{2,5} \frac{x^2 dx}{\sqrt{25-x^2}}$

15 $\int_0^{5} x^2\sqrt{25-x^2}\ dx$

16 $\int_0^{4} \sqrt{16-x^2}\ dx$

17 $\int_0^{4\sqrt{3}} \frac{dx}{\sqrt{(64-x^2)^3}}$

18 $\int_{\sqrt{2}}^{2\sqrt{2}} \frac{\sqrt{x^2-2}}{x^4}\,dx$

19 $\int_0^{2\sqrt{2}} \frac{x^4 dx}{(16-x^2)\sqrt{16-x^2}}$

20 $\int_{-3}^{3} x^2\sqrt{9-x^2}\ dx$

21 $\int_1^{\sqrt{3}} \frac{dx}{\sqrt{(1+x^2)^3}}$

22 $\int_0^{2} \frac{dx}{\sqrt{(16-x^2)^3}}$

23 $\int_0^{2} \frac{x^4 dx}{\sqrt{(8-x^2)^3}}$

24 $\int_3^{6} \frac{\sqrt{x^2-9}}{x^4}\,dx$

25 $\int_0^{1} \sqrt{4-x^2}\ dx$

26 $\int_2^{4} \frac{\sqrt{x^2-4}}{x^4}\,dx$

27 $\int_0^2 \frac{dx}{(4+x^2)\sqrt{4+x^2}}$

28 $\int_0^{\sqrt{2}} \frac{x^4 dx}{(4-x^2)^{\frac{3}{2}}}$

29 $\int_0^{\frac{1}{\sqrt{2}}} \frac{dx}{(1-x^2)\sqrt{1-x^2}}$

30 $\int_0^1 \frac{x^2 dx}{\sqrt{4-x^2}}$

31 $\int_0^{\frac{3}{2}} \frac{x^2 dx}{\sqrt{9-x^2}}$

32 $\int_0^{\sqrt{3}} \sqrt{3-x^2}\ dx$

33 $\int_0^{\sqrt{5}} \frac{dx}{\sqrt{(x^2+5)^3}}$

34 $\int_{\sqrt{3}}^2 \frac{\sqrt{x^2-3}}{x^2} dx$

35 $\int_0^{\frac{\sqrt{3}}{2}} x^2\sqrt{3-x^2}\ dx$

36 $\int_0^{\sqrt{5}} \frac{x^3 dx}{(5+x^2)^{\frac{5}{2}}}$

37 $\int_{\sqrt{3}}^2 \frac{\sqrt{x^2-3}}{x^4} dx$

38 $\int_0^{\frac{3}{2}} \frac{x^2 dx}{\sqrt{3-x^2}}$

39 $\int_0^{\sqrt{3}} \frac{dx}{(\sqrt{3+x^2})^3}$

40 $\int_{\sqrt{3}}^2 \frac{\sqrt{x^2-3}}{x^3} dx$

41 $\int_{\frac{\sqrt{3}}{2}}^{\sqrt{3}} \frac{dx}{x^2\sqrt{3-x^2}}$

42 $\int_0^{\sqrt{3}} \frac{x^3 dx}{(\sqrt{3+x^2})^5}$

43 $\int_{\sqrt{5}}^{\sqrt{10}} \frac{\sqrt{x^2-5}}{x^2} dx$

44 $\int_0^{\sqrt{5}} \sqrt{5-x^2}\ dx$

45 $\int_0^6 \frac{dx}{(36+x^2)^{\frac{3}{2}}}$

46 $\int_{\sqrt{5}}^{\sqrt{10}} \frac{\sqrt{x^2-5}}{x^4} dx$

47 $\int_0^{\sqrt{\frac{5}{2}}} x^2\sqrt{5-x^2}\ dx$

48 $\int_0^{6\sqrt{3}} \frac{x^3 dx}{(\sqrt{36+x^2})^5}$

49 $\int_{\sqrt{5}}^{\sqrt{10}} \frac{\sqrt{x^2-5}}{x^3} dx$

50 $\int_0^{\sqrt{5}} \frac{x^2 dx}{\sqrt{5-x^2}}$

51 $\int_0^7 \frac{dx}{(49+x^2)^{\frac{3}{2}}}$

52 $\int_4^8 \frac{\sqrt{x^2-16}}{x^2} dx$

53 $\int_{\frac{\sqrt{5}}{2}}^{\sqrt{5}} \frac{dx}{x^2\sqrt{5-x^2}}$

54 $\int_0^7 \frac{x^3 dx}{(49+x^2)^{\frac{5}{2}}}$

55 $\int_4^8 \frac{\sqrt{x^2-16}}{x^4} dx$

56 $\int_0^4 \sqrt{64-x^2}\ dx$

57 $\int_0^8 \frac{dx}{(\sqrt{64+x^2})^3}$

58 $\int_4^8 \frac{\sqrt{x^2-16}}{x^3} dx$

59 $\int_0^8 x^2\sqrt{64-x^2}\ dx$

60 $\int_0^8 \frac{x^3 dx}{(\sqrt{64+x^2})^5}$