

**Analiza matematyczna, zjazd 8; 9.01.2010**

Proszę znaleźć następujące całki:

Proste całki:

1.  $\int x^3 + x^2 dx$
2.  $\int 3x^5 dx$
3.  $\int 5x^2 + \frac{7}{x^2} dx$
4.  $\int 4x\sqrt{x} + 2x^3 dx$
5.  $\int 2x^2 + \frac{3\sqrt[3]{x}}{x^2} dx$
6.  $\int 7x^2\sqrt{x} - \frac{3x\sqrt[4]{x}}{x^2} dx$
7.  $\int \frac{2x + 5x^3}{x^2} dx$
8.  $\int \frac{3\sqrt{x} - 7x^5}{x^2} dx$
9.  $\int \frac{(x+2)^2}{x} dx$
10.  $\int \frac{(x-3)^2}{x^2} dx$
11.  $\int \frac{3}{x} + \frac{5}{x^2} dx$
12.  $\int 5\sin x - 3\cos x dx$
13.  $\int 4e^x - 5 \cdot 2^x dx$
14.  $\int 5 \cdot 2^{x+1} dx$
15.  $\int 3 \cdot 5^{2x-1} dx$
16.  $\int \frac{5}{x^2+1} dx$
17.  $\int \frac{x^2}{x^2+1} dx$

Całki przez podstawienie:

18.  $\int \frac{3x^2 - 2}{x^2 + 1} dx$
19.  $\int \sin(3x + 1) dx$
20.  $\int \frac{1}{2x - 5} dx$
21.  $\int \frac{1}{(5x + 1)^3} dx$
22.  $\int \cos(4x - 3) dx$
23.  $\int x \sin(x^2 + 1) dx$
24.  $\int x^2 \cos(x^3 - 2) dx$
25.  $\int x^2 \sqrt{2x^3 + 1} dx$
26.  $\int \sqrt{x^4 + x^2} dx$
27.  $\int \sin x \sin(\cos x) dx$
28.  $\int \sin x \cos x dx$
29.  $\int \sin^2 x \cos x dx$
30.  $\int \sin x \cos^2 x dx$
31.  $\int \operatorname{tg} x dx$
32.  $\int \frac{\ln^3 x}{x} dx$
33.  $\int \frac{\ln x^3}{x} dx$
34.  $\int x e^{-x^2} dx$

$$35. \int \frac{x}{x^2 + 1} dx$$

$$36. \int \frac{x}{x^4 + 1} dx$$

$$37. \int \frac{x^2}{x^3 + 1} dx$$

$$38. \int \frac{1}{x^2 + 2x + 2} dx$$

$$39. \int \frac{1}{x^2 + 3} dx$$

$$40. \int \frac{1}{x^2 + 2x + 3} dx$$

$$41. \int \frac{x}{x^2 + 1} dx$$

$$42. \int \frac{3x + 2}{x^2 + 1} dx$$

Funkcje wymierne:

$$43. \int \frac{1}{x(x-2)} dx$$

$$44. \int \frac{1}{x^2 - 1} dx$$

$$45. \int \frac{1}{(x-1)(x-2)} dx$$

$$46. \int \frac{1}{x(x^2 + 1)} dx$$

$$47. \int \frac{x+1}{x(x-2)} dx$$

$$48. \int \frac{x}{x^2 - 1} dx$$

$$49. \int \frac{x}{(x-1)(x-2)} dx$$

$$50. \int \frac{x^2 + 1}{x(x-2)} dx$$

$$51. \int \frac{x^2}{x^2 - 1} dx$$

$$52. \int \frac{x^2}{(x-1)(x-2)} dx$$

$$53. \int \frac{x^2 + 1}{x(x^2 + 1)} dx$$

Całki przez części:

$$54. \int x \sin x dx$$

$$55. \int x e^x dx$$

$$56. \int x^2 \cos x dx$$

$$57. \int \ln x dx$$

$$58. \int x \ln x dx$$

$$59. \int \sin^2 x dx$$

$$60. \int \sin x \cos x dx$$

$$61. \int \sin x e^x dx$$

Całki różne:

$$62. \int \frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x} dx$$

$$63. \int \frac{\ln x}{x^2} dx$$

$$64. \int \sin^3 x dx$$

$$65. \int \sin^4 x dx$$

$$66. \int x^3 e^{x^2} dx$$

$$67. \int x^5 \sin x^3 dx$$

$$68. \int x \sin^2 x dx$$