Partial fractions (integration of rational functions)

1. $\int \frac{2x-1}{(x-1)(x-2)} \, \mathrm{d}x$

2. $\int \frac{5x-3}{x^2-5x+6} \, \mathrm{d}x$

3. $\int \frac{x+1}{x^2+6x+9} \, \mathrm{d}x$

4. $\int \frac{1}{(x-1)^2(x-2)} \, \mathrm{d}x$

5. $\int \frac{3x-1}{x+2} \, \mathrm{d}x$

6. $\int \frac{27x^3}{3x+1} \, \mathrm{d}x$

7. $\int \frac{x^4}{x^2+6x+9} \, \mathrm{d}x$

8. $\int \frac{x^3}{x^2+3x+2} \, \mathrm{d}x$

9. $\int \frac{1}{x(x^2+1)} \, \mathrm{d}x$

10. $\int \frac{1}{x^2+9} \, \mathrm{d}x$

11. $\int \frac{3x-2}{x(x^2+1)} \, \mathrm{d}x$

12. $\int \frac{1}{4x^2+4x+2} \, \mathrm{d}x$

Integration of trigonometric functions and their powers

1. $\int \cos^2 2x \, \mathrm{d}x$

2. $\int \sin^2 x \cos^2 x \, \mathrm{d}x$

3. $\int \frac{\cos^3 x}{\sin^4 x} \, \mathrm{d}x$

4. $\int \frac{\tan^3 x}{\cos^2 x} \, \mathrm{d}x$

5. $\int \cos^3 x \sin^3 x \, \mathrm{d}x$

Substitution (II)

1. $\int \frac{1}{1+\sqrt{x+1}} \, \mathrm{d}x$

2. $\int \frac{3x}{\sqrt{2x+1}} \, \mathrm{d}x$

3. $\int \frac{1}{(2+x)\sqrt{1+x}} \, \mathrm{d}x$

4. $\int \frac{\sqrt{x-1}}{x+2} \, \mathrm{d}x$