INTEGRALS

INTEGRATION BY PARTIAL FRACTIONS

EXERCISE

Q.1 What form of rational function $\frac{px+q}{(x-a)(x-b)}$, $a \neq b$ represents?

(a) $\frac{A}{(x-a)}$ (b) $\frac{B}{(x-b)}$

(c) $\frac{A+B}{(x-a)(x-b)}$ (d) $\frac{A}{(x-a)}+\frac{B}{(x-b)}$

Q.2 Find $\int \frac{x^2+1}{x^2-5x+6}dx$.

(a) $x-5\log|x-2|+10\log|x-3|+C$

(b) $x-3\log|x-2|+5\log|x-3|+C$

(c) $x-10\log|x-2|+5\log|x-3|+C$

(d) $x-5\log|x-5|+10\log|x-10|+C$

Q.3 Find $\int \frac{dx}{(x+1)(x+2)}$.

(a) $\log\left|\frac{x+1}{x+2}\right|+C$ (b) $\log\left|\frac{x-1}{x+2}\right|+C$

(c) $\log\left|\frac{x+2}{x+1}\right|+C$ (d) $\log\left|\frac{x+1}{x-2}\right|+C$

Q.4 An improper integration fraction is reduced to proper fraction by ____

(a) multiplication (b) division

(c) addition (d) subtraction

Q.5 $\int \frac{dx}{x\left(x^2+1\right)}$ equals

(a) $\log|x|-\frac{1}{2}\log\left(x^2+1\right)+\mathrm{C}$

(b) $\log|x|+\frac{1}{2}\log\left(x^2+1\right)+\mathrm{C}$

(c) $-\log|x|+\frac{1}{2}\log\left(x^2+1\right)+C$

(d) $\frac{1}{2}\log|x|+\log\left(x^2+1\right)+C$

Q.6 $\int \frac{dx}{\left(x^2-9\right)}$ equals

(a) $\frac{1}{6}\log\frac{x+3}{x-3}+C$ (b) $\frac{1}{6}\log\frac{x-3}{x+3}+C$

(c) $\frac{1}{5}\log\frac{x+3}{x-3}+C$ (d) $\frac{1}{3}\log\frac{x+3}{x-3}+\mathrm{C}$

Q.7 Which form of rational function $\frac{px+q}{(x-a)^2}$ represents?

(a) $\frac{A}{(x-a)}+\frac{B}{(x-a)^2}$ (b) $\frac{A}{(x-a)^2}+\frac{B}{(x-a)}$

(c) $\frac{A}{(x-a)}-\frac{B}{(x-a)^2}$ (d) $\frac{A}{(x-a)}-\frac{B}{(x-a)}$

Q.8 (d) $\frac{A}{(x-a)} - \frac{B}{(x-a)}$

(a) $\frac{3}{5}\log|x+2| + \frac{1}{5}\log\left|x^2+1\right| + \frac{1}{5}\tan^{-1}x + 5C$

(b) $\frac{3}{6}\log|x+2| + \frac{1}{6}\log\left|x^2+1\right| + \frac{1}{6}\tan^{-1}x + C$

(c) $\frac{3}{5}\log|x+2| + \frac{1}{6}\log\left|x^2+1\right| + \frac{1}{6}\tan^{-1}x + C$

(d) $\frac{3}{5}\log|x+2| + \frac{1}{5}\log\left|x^2+1\right| + \frac{1}{5}\tan^{-1}x + C$

Q.9 Identify the type of the equation $(x+1)^2$.

(a) Linear equation (b) Cubic equation

(c) Identity (d) Imaginary

Q.10 For the given equation $(x+2)(x+4) = x^2 + 6x + 8$, how many values of x satisfies this equation?

(a) Two values of x (b) One value of x

(c) All value of x (d) No value of x

ANSWER KEY

1. (d)

2. (a)

3. (a)

4. (b)

5. (a)

6. (b)

7. (a)

8. (d)

9. (c)

10. (c)