



Express the following in partial fractions:

$$1. \quad \frac{3x-10}{(x-2)(x-4)} \qquad \left[\frac{1}{x-4} + \frac{2}{x-2} \right]$$

$$2. \quad \frac{3x+1}{2x^2-x-1} \qquad \left[\frac{1}{3(2x+1)} + \frac{4}{3(x-1)} \right]$$

$$3. \quad \frac{x^2+3x+1}{(x+1)(x+2)} \qquad \left[1 - \frac{1}{x+1} + \frac{1}{x+2} \right]$$

$$4. \quad \frac{17x+11}{(x-2)(x+3)(x+1)} \qquad \left[\frac{-4}{x+3} + \frac{3}{x-2} + \frac{1}{x+1} \right]$$

$$5. \quad \frac{2x^2}{(x+1)(2x-1)^2} \qquad \left[\frac{2}{9(x+1)} + \frac{5}{9(2x-1)} + \frac{1}{3(2x-1)^2} \right]$$

$$6. \quad \frac{2x^2+1}{x^3-2x^2+x} \qquad \left[\frac{1}{x} + \frac{1}{x-1} + \frac{3}{(x-1)^2} \right]$$

$$7. \quad \frac{5x}{(4x^2-1)(2x+1)} \qquad \left[\frac{-5}{8(2x+1)} + \frac{5}{4(2x+1)^2} + \frac{5}{8(2x-1)} \right]$$

$$8. \quad \frac{5x}{(x+2)(x^2+1)} \qquad \left[\frac{2x+1}{x^2+1} - \frac{2}{x+2} \right]$$

$$9. \quad \frac{5}{2(x-1)(2x^2+3)} \qquad \left[\frac{-x-1}{2x^2+3} + \frac{1}{2(x-1)} \right]$$

$$10. \quad \frac{x^4}{x^4-1} \qquad \left[1 + \frac{1}{4(x-1)} - \frac{1}{4(x+1)} - \frac{1}{2(x^2+1)} \right]$$

$$11. \quad \frac{3x^3+2x^2+2x-3}{(x^2+2)(x+1)^2} \qquad \left[\frac{1}{x+1} - \frac{2}{(x+1)^2} + \frac{2x-1}{x^2+2} \right]$$

$$12. \quad \frac{x^3+x-1}{x^2+x^4} \qquad \left[\frac{1}{x^2+1} + \frac{1}{x} - \frac{1}{x^2} \right]$$

13. A, B and C are real constants such that $\frac{x^4+1}{x^3+2x} = x + \frac{A}{x} + \frac{Bx+C}{x^2+2}$ for all real values of x except $x = 0$. Determine the values of A, B and C .

$$\left[A = \frac{1}{2}, B = -\frac{5}{2}, C = 0 \right]$$

14. Find A, B and C if $\frac{2x^2+x+1}{(x+1)(x-2)} = A + \frac{B}{x+1} + \frac{C}{x-2}$.

$$\left[A = 2, B = -\frac{2}{3}, C = \frac{11}{3} \right]$$