

## Partial Fraction Decomposition

Find the partial fraction decomposition for the following.

$$1. \frac{4x-1}{x^2+x-2} = \frac{3}{(x+2)} + \frac{1}{(x-1)}$$

$$2. \frac{6x^2-7x-1}{(x-1)(x+1)(x-2)} = \frac{1}{(x-1)} + \frac{2}{(x+1)} + \frac{3}{(x-2)}$$

$$3. \frac{4x-3}{x(x-1)} = \frac{3}{x} + \frac{1}{x-1}$$

$$4. \frac{2x}{x^2-1} = \frac{1}{x-1} + \frac{1}{x+1}$$

$$5. \frac{x+4}{x^2+2x-3} = \frac{-1}{x+3} + \frac{5}{x-1} = \frac{-1}{4(x+3)} + \frac{5}{4(x-1)}$$

$$6. \frac{1}{x^2+3x+2} = \frac{1}{x+1} - \frac{1}{x+2}$$

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$$7. \frac{2x^2 + 4x + 3}{x(x+1)^2} = \frac{3}{x} + \frac{-1}{x+1} + \frac{-1}{(x+1)^2}$$

$$8. \frac{x^2 - 3x}{(1+x)(x-1)^2} = \frac{1}{(1+x)} + \frac{0}{(x-1)} - \frac{1}{(x-1)^2} = \frac{1}{(1+x)} - \frac{1}{(x-1)^2}$$

$$9. \frac{12x^2 + 2x + 3}{4x^3 + x} = \frac{2}{4x^2 + 1} + \frac{3}{x}$$

$$10. \frac{4x+2}{3x^2-14x-5}$$

*Partial Fraction Decomposition*  
*using the method of equating coefficients*

$$-\frac{1}{8(3x+1)} + \frac{11}{8(x-5)}$$