

Partial fraction:

1. Do long division if necessary;
2. Write the rational function as sum of partial fractions, remember the special rule about multiple roots;
3. Add the partial fractions up, be careful;
4. Solve linear system.

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

2.  $\int \frac{3t-2}{t+1} dx$

Intermediate questions:)

3.  $\int \frac{x-4}{x^2-5x+6} dx$

4.  $\int \frac{x^2-x+6}{x^3+3x} dx$

5.  $\int \frac{x^3+2x}{x^4+4x^2+3} dx$

6.  $\int \frac{3x^2+x+4}{x^4+3x^2+2} dx$

7.  $\int \frac{\sin x}{\cos^2 x - 3 \cos x} dx$