$$(f \pm g)'(x) = f'(x) \pm g'(x)$$

$$(f \cdot g)'(x) = f'(x)g(x) + f(x)g(x)'$$

$$(f(g(x))'(x) = f'(g(x)) \cdot g'(x)$$

$$R(x) = \frac{Q(x)}{P(x)}$$

Case 1: $P(x) \Rightarrow$ simple roots $P(x) = \prod_{i=1}^{n} (a_i x + b)$

$$\frac{Q(x)}{P(x)} = R(x) = \sum_{i=1}^{n} \frac{C_i}{(a_i x + b)}$$

2: $P(x)$ has multiple roots: $P(x) = p(x) \cdot (ax+b)^k$

has only simple roots: $p(x) = \prod_{j=1}^{n} (a_i x + b_i)$

$$R(x) = \sum_{i=1}^{n} \frac{C_i}{a_i x + b_i} + \sum_{i=1}^{k} \frac{D_i}{ax+b}$$