| Rational Function | Partial Fraction Expansion | Derived in example… |
|---|---|---|
| 1. $\dfrac{cz+d}{(z-a)(z-b)}$ | $\left(\dfrac{1}{a-b}\right)\left[\dfrac{ca+d}{(z-a)} - \dfrac{cb+d}{(z-b)}\right]$ | Example 7.1 |
| 2. $\dfrac{cz+d}{(z-a)^2}$ | $\dfrac{c}{(z-a)} + \dfrac{ca+d}{(z-a)^2}$ | Example 7.2 |
| 3. $\dfrac{dz^2 + ez + f}{(z-a)(z-b)(z-c)}$ | $\dfrac{da^2 + ea + f}{(z-a)(a-b)(a-c)} +$ $\dfrac{db^2 + eb + f}{(b-a)(z-b)(b-c)} +$ $\dfrac{dc^2 + ec + f}{(c-a)(c-b)(z-c)}$ | Example 7.3 |
| 4. $\dfrac{cz^2 + dz + e}{(z-a)^2(z-b)}$ | $\dfrac{ca^2 - 2cab - bd - e}{(z-a)(a-b)^2} +$ $\dfrac{ca^2 + da + e}{(z-a)^2(a-b)} +$ $\dfrac{cb^2 + db + e}{(b-a)^2(z-b)}$ | Example 7.4 |
| 5. $\dfrac{cz^2 + dz + e}{(z-a)(z-b)}$ | $c + \left(\dfrac{1}{a-b}\right)\left[\dfrac{a(ac+d)+e}{(z-a)} - \dfrac{b(bc+d)+e}{(z-b)}\right]$ | Example 7.5 |
| 6. $\dfrac{dz^{-1} + c}{(az^{-1} - 1)(bz^{-1} - 1)}$ | $c + \left(\dfrac{1}{a-b}\right)\left[\dfrac{a(ac+d)}{(z-a)} - \dfrac{b(bc+d)}{(z-b)}\right]$ | Example 7.6 |
| 7. $\dfrac{bz^2 + cz + d}{(z-a)^3}$ | $\dfrac{b}{(z-a)} + \dfrac{2ab+c}{(z-a)^2} + \dfrac{ba^2 + ca + d}{(z-a)^3}$ | Example 7.7 |
| Table 7.4. Table of Partial Fraction Expansions | | |