

AN INTRODUCTION TO PARTIAL FRACTIONS

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$\frac{1}{(s+a)(s+b)}$	=	$\frac{1}{(a-b)} \left[\frac{-1}{s+a} + \frac{1}{s+b} \right], \quad a \neq b$
$\frac{s}{(s+a)(s+b)}$	=	$\frac{1}{(a-b)} \left[\frac{a}{s+a} + \frac{-b}{s+b} \right], \quad a \neq b$
$\frac{s^2}{(s+a)(s+b)}$	=	$1 - \left[\frac{(a+b)s}{(s+a)(s+b)} \right] - \left[\frac{ab}{(s+a)(s+b)} \right]$ $= \frac{1}{(a-b)} \left[\frac{a}{s+a} + \frac{-b}{s+b} \right], \quad a \neq b$
$\frac{1}{(s^2+a^2)(s+b)}$	=	$\frac{1}{(a^2+b^2)} \left[\frac{-s+b}{s^2+a^2} + \frac{1}{s+b} \right]$

(1)