

$$3s^2 + \frac{101}{6}s - \frac{73}{9}$$

$$3 \left[ s^2 + \frac{101}{(3)(6)}s - \frac{7.3}{(3)(9)} \right]$$

$$3 \left[ s + \frac{1}{2} \underbrace{\hspace{1cm}}_{\substack{\uparrow \\ \frac{101}{(3)(6)}}} \right]^2 - \frac{7.3}{(3)(9)} - \underbrace{\hspace{1cm}}_{\substack{\uparrow \\ \frac{101}{(3)(6)}}}$$

Completing the Square!

$$\frac{3s + 17}{5s^2 - 7s + 41}$$

$$5s^2 - 7s + 41$$

$$\rightarrow -\frac{7}{5} \cdot \frac{1}{2} = -\frac{7}{10}$$

$$5\left[s + \left(-\frac{7}{10}\right)\right]^2 + \frac{41}{5}\left(-\frac{7}{10}\right)^2$$

$$\frac{3\left(s - \frac{7}{10}\right) + 17}{5\left[s - \frac{7}{10}\right]^2 + \frac{41}{5} - \frac{7^2}{10^2}} \quad \alpha^2$$

Replace  $s$  with  $s - \frac{7}{10}$

$$\frac{3s + 3 \cdot \frac{7}{10} + 17}{5(s^2 + \alpha^2)}$$

$$\rightarrow \frac{3}{5} \frac{s}{s^2 + \alpha^2} + \frac{\frac{21}{10} + \frac{17}{5}}{5} \cdot \frac{1}{s^2 + \alpha^2}$$