

- Determine the time-domain response to a unit-step input of a system with 0 initial conditions whose transfer function is

$$G(s) = \frac{Y(s)}{X(s)} = \frac{5s + 3}{s^2 + 4s + 3}$$

$f(t)$	$F(s)$
$e^{-at} \cdot u(t)$	$\frac{1}{s + a}$
$u(t)$ (unit step function)	$\frac{1}{s}$
$\frac{df}{dt}$	$s \cdot F(s) - f(0)$
$\frac{d^2f}{dt^2}$	$s^2 \cdot F(s) - s \cdot f(0) - \dot{f}(0)$
$f(\infty)$ (Final Value Theorem)	$\lim_{s \rightarrow 0} s \cdot F(s)$

Form of standard second-order: $\frac{K_{ss} \cdot \omega_n^2}{s^2 + 2 \cdot \zeta \cdot \omega_n \cdot s + \omega_n^2}$