

MAT250 Quiz 2  
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**Problem 1:**

$$\begin{bmatrix} > h := (7 \cdot t - 2)^5 \\ & h := (7t - 2)^5 \end{bmatrix} \quad (1)$$

$$\begin{bmatrix} > h\_p := \text{diff}(h, t) \\ & h\_p := 35 (7t - 2)^4 \end{bmatrix} \quad (2)$$

$$\begin{bmatrix} > h\_{pp} := \text{diff}(h\_p, t) \\ & h\_{pp} := 980 (7t - 2)^3 \end{bmatrix} \quad (3)$$

**>** *with(inttrans) :*

$$\begin{bmatrix} > \text{laplace}(h, t, s) \\ & - \frac{8 (4s^5 - 70s^4 + 980s^3 - 10290s^2 + 72030s - 252105)}{s^6} \end{bmatrix} \quad (4)$$

$$\begin{bmatrix} > \text{laplace}(h\_p, t, s) \\ & \frac{280 (2s^4 - 28s^3 + 294s^2 - 2058s + 7203)}{s^5} \end{bmatrix} \quad (5)$$

$$\begin{bmatrix} > \text{laplace}(h\_{pp}, t, s) \\ & - \frac{1960 (4s^3 - 42s^2 + 294s - 1029)}{s^4} \end{bmatrix} \quad (6)$$

**Problem 2:**

**>** *with(inttrans) :*

$$\begin{bmatrix} > \text{laplace}(\exp(-3 \cdot t) \cdot (2 \cdot \cos(5 \cdot t) - 3 \cdot \sin(5 \cdot t)), t, s) \\ & \frac{-9 + 2s}{(s + 3)^2 + 25} \end{bmatrix} \quad (7)$$