



Differential Equations Assignment 17

Find the following using the table of Laplace Transforms.

(a) $\mathcal{L}\{1 + t + t^2 + t^3 + t^4 + t^5\}$

(b) $\mathcal{L}\{3 + 4t - 5t^2 + 7t^3\}$

(c) $\mathcal{L}\{\cos 4t - \sin 7t + e^{-t}\}$

(d) $\mathcal{L}\{(t + 2)^3\}$

(e) $\mathcal{L}\{\cosh 2t + e^{8t}\}$

(f) $\mathcal{L}\{t + 6t^2 + \sinh 7t\}$

(g) $\mathcal{L}\{\sin 3t \cos 3t\}$

(h) $\mathcal{L}\{\cos^2 4t\}$

(i) $\mathcal{L}\{\sin^2 3t\}$

(j) $\mathcal{L}\{e^{2t} \sinh 6t\}$



Solutions to Assignment 17

$$(a) \frac{1}{s} + \frac{1}{s^2} + \frac{2}{s^3} + \frac{6}{s^4} + \frac{24}{s^5} + \frac{120}{s^6}$$

$$(b) \frac{3}{s} + \frac{4}{s^2} - \frac{10}{s^3} + \frac{42}{s^4}$$

$$(c) \frac{s}{s^2 + 16} - \frac{7}{s^2 + 49} + \frac{1}{s + 1}$$

$$(d) \frac{6}{s^4} + \frac{12}{s^3} + \frac{12}{s^2} + \frac{8}{s}$$

$$(e) \frac{s}{s^2 - 4} + \frac{1}{s - 8}$$

$$(f) \frac{1}{s^2} + \frac{12}{s^3} + \frac{7}{s^2 - 49}$$

$$(g) \frac{3}{s^2 + 36}$$

$$(h) \frac{s^2 + 32}{s^3 + 64s}$$

$$(i) \frac{18}{s^3 + 36s}$$

$$(j) \frac{6}{s^2 - 4s - 32}$$