Laplace Transform of Integrals: ME-4203

Tuesday, 13 February 2024 9:18 am

$$\mathcal{L}\left\{\int f(t)\,dt\right\} = \frac{F(s)}{s},$$

1) $\mathcal{L}\left\{\int \cos 4t\,dt\right\}; \omega = 4$

$$= \frac{s}{s^2+16} \cdot \frac{1}{s} = \frac{1}{s^2+16}$$

$$\boxed{F(s) = \frac{1}{s^2+16}}$$

2) $\mathcal{L}\left\{\int 3t^6\,dt\right\}; n = 6$

$$3\left(\frac{6!}{s^{6+1}}\right) = \frac{2160}{s^7}$$

$$F(s) = \frac{2,160}{s^8}$$