

W4L4 - BASIC INVERSE LAPLACE TRANSFORMS

Find the inverse Laplace transform, $f(t)$ of the function $F(s) = \frac{6}{s^4}$, $s > 0$

$$F(s) = \frac{6}{s^4}$$

$$\mathcal{L}^{-1}[F(s)] = \mathcal{L}^{-1}\left[\frac{6}{s^4}\right]$$

$$f(t) = 6 \mathcal{L}^{-1}\left[\frac{3!}{s^{3+1}}\right]$$

$$f(t) = \frac{6}{3!} \mathcal{L}^{-1}\left[\frac{3!}{s^{3+1}}\right]$$

$$\boxed{f(t) = t^3}$$

From table \Rightarrow $f(t) = t^n$ $F(s) = \frac{n!}{s^{n+1}}$

Find the inverse Laplace transform, $f(t)$ of the function $F(s) = \frac{8}{s^3}$, $s > 0$

$$F(s) = \frac{8}{s^3}$$

$$\mathcal{L}^{-1}[F(s)] = \mathcal{L}^{-1}\left[\frac{8}{s^3}\right]$$

$$f(t) = 8 \mathcal{L}^{-1}\left[\frac{2!}{2!s^{2+1}}\right]$$

$$f(t) = \frac{8}{2!} \mathcal{L}^{-1}\left[\frac{2!}{s^{2+1}}\right]$$

$$\boxed{f(t) = 4t^2}$$