تمرین 1

$$\mathcal{L}[x^2 f(x)] = ?$$

$$\mathcal{L}[x^n f(x)] = ?$$ (با استقراء)

تذکر

$$\mathcal{L}^{-1}[F'(s)] = -x f(x)$$

$$= -x\, \mathcal{L}^{-1}[F(s)]$$

تمرین 2

$$\mathcal{L}^{-1}\left[\tan^{-1}\left(\frac{1}{s}\right)\right] = ?$$

تمرین 3

$$\mathcal{L}^{-1}[\ln(s)] = ?$$

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

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

(6) $\mathcal{L}^{-1}\left[\frac{1}{s^2+s}\right] = ?$

(7) $\mathcal{L}^{-1}\left[\frac{1}{(s-1)^2+1}\right]$

(8) $\mathcal{L}^{-1}\left[\frac{2}{(s+1)^2+4}\right] = ?$

(9) $\mathcal{L}^{-1}\left[\frac{s}{(s+1)^2}\right] = ?$

(10) $\mathcal{L}^{-1}\left[\dfrac{s+2}{s^2+1}\right] = ?$

(11) $\mathcal{L}\left[x \sin x\right] = ?$

(12) $\mathcal{L}^{-1}\left[\dfrac{2}{(s-4)^3}\right] = ?$

(13) $\mathcal{L}\left[e^{2x} \cos 3x\right] = ?$

(14) $\mathcal{L}^{-1}\left[\dfrac{s}{s^2-2s+3}\right] = ?$

(15) $\mathcal{L}^{-1}\left[\dfrac{s-2}{s^2+4s+5}\right] = ?$

(16) $\mathcal{L}^{-1}\left[\dfrac{s}{(s-1)^5}\right] = ?$

(17) $\mathcal{L}^{-1}\left[\dfrac{1}{s^2-3s+3}\right] = ?$

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