Lista 3*

MAT01168 – Matemática Aplicada II – 2015/1

Encontre a transformada inversa das funções abaixo, utlizando o método que achar mais conveniente/fácil.

(a) $F(s) = \dfrac{3s+7}{s^2-2s-3}$.

(b) $F(s) = \dfrac{1}{(s-2)^3}$.

(c) $F(s) = \dfrac{3s+1}{(s-1)(s^2+1)}$.

(d) $F(s) = \dfrac{s+12}{s^2+4s}$.

(e) $F(s) = \dfrac{s-3}{s^2-1}$.

(f) $F(s) = \dfrac{3s}{s^2+2s-8}$.

(g) $F(s) = \dfrac{3s^2-2s-1}{(s-3)(s^2+1)}$.

(h) $F(s) = \dfrac{s+1}{s^2+4s+13}$.

(i) $F(s) = \dfrac{s^2+s-2}{(s+1)^3}$.

(j) $F(s) = \dfrac{2s^3+10s^2+8s+40}{s^2(s^2+9)}$.

(k) $F(s) = \dfrac{2s^2-4}{(s+1)(s-2)(s-3)}$.

(l) $F(s) = \dfrac{1}{(s^2+4)(s^2+1)}$.

RESPOSTAS

(a) $f(t) = 4e^{3t} - e^{-t}$

(b) $f(t) = \dfrac{1}{2}t^2e^{2t}$

(c) $f(t) = 2e^t - 2\cos t + \operatorname{sen} t$

(d) $f(t) = 3 - 2e^{-4t}$

(e) $f(t) = \cosh t - 3\operatorname{senh} t$

(f) $f(t) = 2e^{-4t} + e^{2t}$

(g) $f(t) = 2e^{3t} + \cos t + \operatorname{sen} t$

(h) $f(t) = e^{-2t}\left[\cos(3t) - \dfrac{1}{3}\operatorname{sen}(3t)\right]$

(i) $f(t) = e^{-t}(1 - t - t^2)$

(j) $f(t) = 2\cos(3t) + \dfrac{10}{3}\operatorname{sen}(3t) + \dfrac{8}{9}\big[1 - \cos(3t)\big] + \dfrac{40}{27}\big[3t - \operatorname{sen}(3t)\big]$

(k) $f(t) = -\dfrac{1}{6}e^{-t} - \dfrac{4}{3}e^{2t} + \dfrac{7}{2}e^{3t}$

(l) $f(t) = \dfrac{1}{3}\left[\operatorname{sen} t - \dfrac{1}{2}\operatorname{sen}(2t)\right]$

*Reprodução da quarta lista sobre a transformada de Laplace da Prof. Irene Strauch.