

SNSCOLLEGEOFTECHNOLOGY



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DEPARTMENTOFMATHEMATICS

UNIT-VLAPLACETRANSFORM

PARTIAL FRACTION . Ind 2-1 [5 (S+1) (S+2)] $\frac{3\ln 1}{5(S+1)(S+2)} = \frac{A}{S} + \frac{B}{S+1} + \frac{C}{S+2}$ 1 = A(S+1)(S+2)+ B(8+2)S+ CS(S+1) put s = -1 1 = A(0)+ B(-1)(1)+ c(0) $\Rightarrow B = -1$ put S = -2, 1 = A(0) + B(0) + C(-2)(-1)1 = 20 => c= 1/2 put s =0 1 = A(1)(2) + B(0) + C(0)=) 1=2A =) A=1/2 $\frac{1}{s(s+1)(s+2)} = \left[\frac{1}{s} - \frac{1}{s+1} + \frac{1}{s+2} \right]$ $L^{-1}\left[\frac{1}{S(S+1)(S+2)}\right] = L^{-1}\left[\frac{\gamma_2}{S}\right] - L^{-1}\left[\frac{1}{S+1}\right] + L^{-1}\left[\frac{\gamma_2}{S+2}\right]$ = 1 2-1 [=] - 2-1 [=] + 1 2 2-1 [=] $= \frac{1}{2} - e^{-t} + \frac{1}{2} e^{-2t}$ $= \frac{1}{3} \left[1 - 2e^{-t} + e^{-2t} \right]$



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$$\frac{30 \ln 7}{(S+1-)(S-3)^2} = \frac{A}{S+1} + \frac{B}{S-3} + \frac{C}{(S-3)^2}$$

$$2S^2 + 4S + 5 = A (S-3)^2 + B(S-3)(S+1)C(S+1)$$

$$S=-1$$
,
2-4+5 = $A(-4)^2+B(-4)(0)+C(0)$

$$\Rightarrow A = 3/16$$

$$\Rightarrow$$
 B= $\frac{29}{16}$

$$\frac{1}{(s+1)(s-3)^2} \int = \frac{3}{16} L^{-1} \left[\frac{1}{s+1} \right] + \frac{29}{16} L^{-1} \left[\frac{1}{s-3} \right] + \frac{35}{4} L^{-1} \left[\frac{1}{(s-3)^2} \right]$$

$$= \frac{3}{11} e^{-t} + \frac{29}{11} e^{3t} + \frac{35}{11} e^{3t}$$

FARTING FRACTION



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3) Itid 1-1
$$\left[\frac{S^2}{(S+1)(S^2+4)}\right]$$

Soln: S^2
 $(S+1)(S^2+4) = \frac{A}{S+1} + \frac{BS+C}{S^2+4}$
 $S^2 = A(S^2+4) + BS+C(S+1)$

Put $S = -1$
 $\Rightarrow 1 = A(5) + B(-1)(0) + C(0)$
 $\Rightarrow A = \frac{1}{6}$

put $S = 0$
 $\Rightarrow 0 = 4A + C \Rightarrow C = -4 | S$

Put $S = -4$
 $16 = 20A + 12B - 3C$
 $\Rightarrow B = \frac{4}{5}$
 $\therefore 1 - 1 \left[\frac{8^2}{(S+1)(S^2+4)}\right] = 1 - 1 \left[\frac{\sqrt{5}}{(S+1)} + \frac{416S - 4}{(S^2+4)}\right]$
 $= \frac{1}{5} 1 - 1 \left[\frac{1}{5} + 1\right] + \frac{4}{5} + \left[\frac{5}{5} + \frac{1}{5} + \frac{1}{$