DE Final Lecture 2 (continue)

Problems 20-40

Ex 5.1

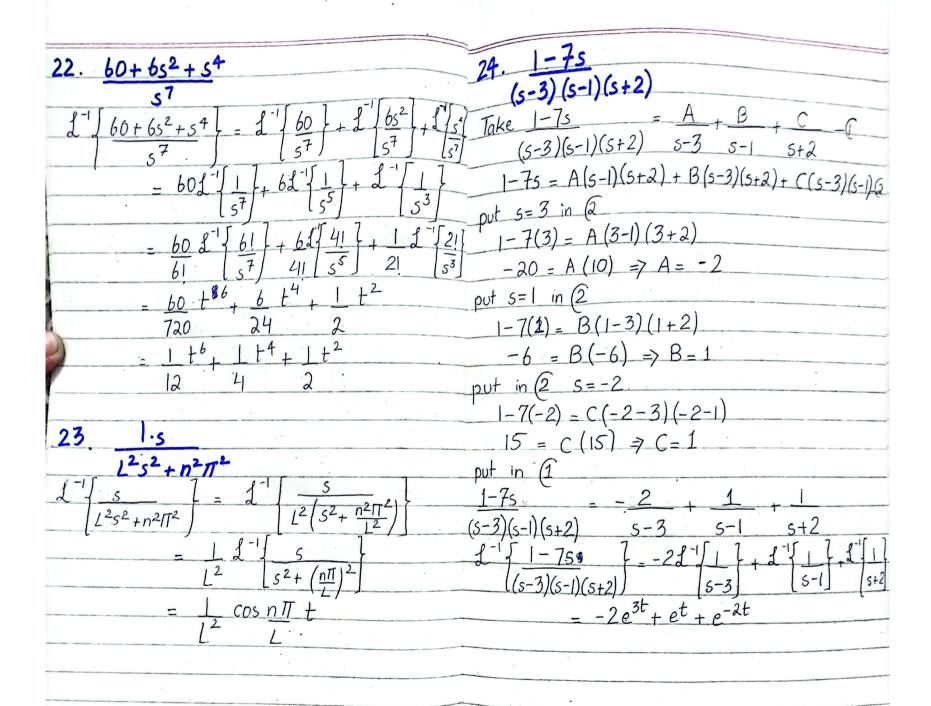
20.
$$\frac{5-4}{5^2-4}$$

$$\begin{bmatrix}
1^{-1} \\
5 - 4
\end{bmatrix} = \begin{bmatrix}
1^{-1} \\
5^{2} - (2)^{2}
\end{bmatrix} = \begin{bmatrix}
1^{-1} \\
5^{2} - (2)^{2}
\end{bmatrix}$$

$$= 2.45 \left[\frac{3!}{3!} \right] = \frac{228 \text{ £}^{-1} \left[\frac{5!}{25^6} \right]}{5!}$$

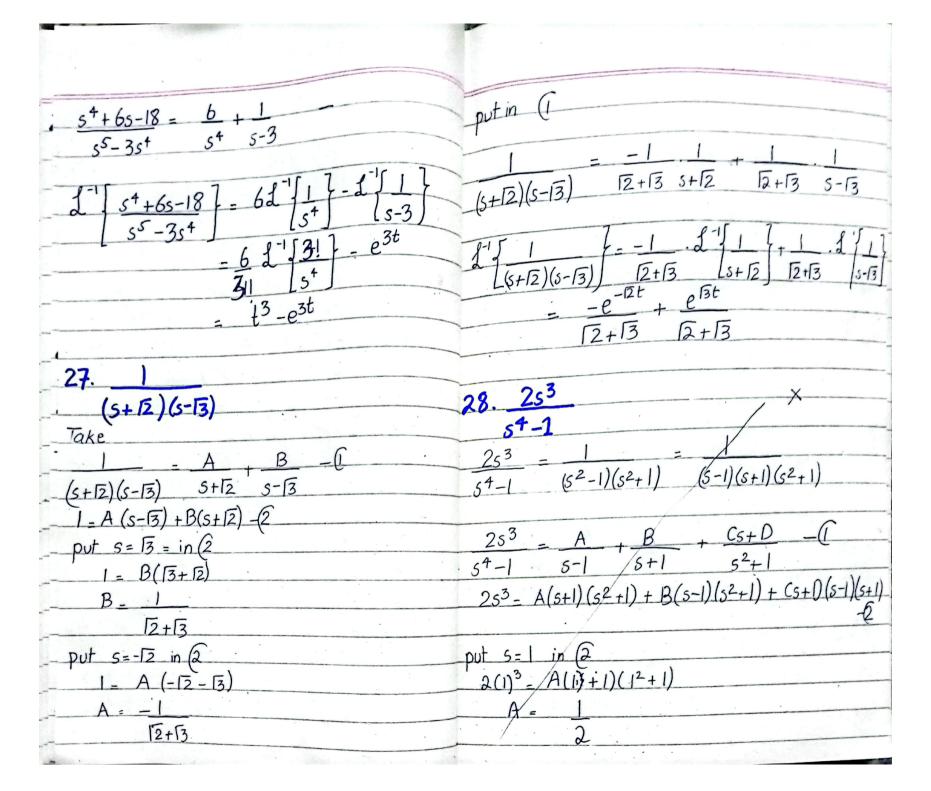
$$\frac{2.4}{6} \cdot t^3 - \frac{228}{120} \cdot t^5$$

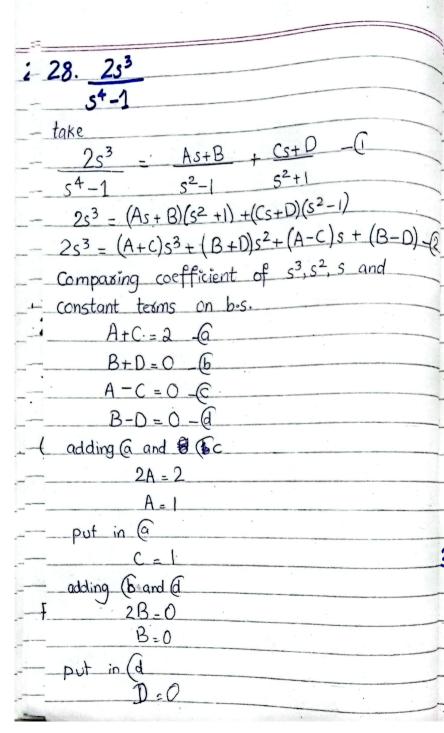
$$=\frac{2}{5}t^3-\frac{19}{10}t^5$$



25.
$$\sum_{k=1}^{5} \frac{a_k}{s+k^2}$$
 put $s=0$ in (2)

$$\frac{1}{s+k^2} \frac{1}{s+k^2} \frac$$





put in (1

253 = 5

$$5^{2}-1$$
 $5^{2}+1$

Now

$$\int_{0}^{1} \int_{0}^{2} ds^{3} ds^{3} ds^{2} ds$$

31. Sezt sinh2t

$$\frac{10}{(5-2)^2 \cdot 4}$$

32. 2e-t cos21t

$$\frac{2e^{-t}\cos^{2}1t - 2e^{-t}\left(\frac{1+\cos t}{2}\right)}{2}$$

$$= e^{-t} + e^{-t} \cos t$$

$$1 \{2e^{-t}\cos^2 1t\} = 1^{-1}\{e^{-t}\} + 1\{\cos t\}$$

33. sinhtcost

$$\frac{\sin ht \cos t}{2} = \frac{\left(e^{t} - e^{-t}\right) \cos t}{2}$$

$$= \frac{1}{2}e^{t} \cos t - \frac{1}{2}e^{-t} \cos t$$

$$\frac{2}{2}\left[\sin ht \cos t\right] - \frac{1}{2}\left[\cos t\right] - \frac{1}{2}\left[\cos t\right]$$

$$= \frac{1}{2}\left[\sin ht \cos t\right] - \frac{1}{2}\left[\cos t\right]$$

$$= \frac{1}{2}\left[\sin ht \cos t\right] - \frac{1}{2}\left[\cos t\right]$$

$$= \frac{1}{2}\left[\cos \frac{1}{$$

34. $(t+1)^2 e^t$

$$(t+1)^{2}e^{t} = (t^{2}+2t+1)e^{t}$$

$$= t^{2}e^{t} + 2te^{t} + e^{t}$$

$$\int \{(t+1)^{2}e^{t}\} = \int \{t^{2}\}_{s\to s-1} + 2\int \{t\}_{s\to s-1} + \int \{e^{t}\}_{s\to s-1} + 2\int \{t\}_{s\to s-1} + \int \{e^{t}\}_{s\to s-1} + \int \{e^{$$

Inverse Transform.

1-1{
$$F(s-a)$$
} = $e^{at}f(t) = e^{at}1^{-1}{F(s)}$

$$\begin{bmatrix}
1 \\
(S+1)^2
\end{bmatrix} = e^{-t} \int_{-1}^{-1} \left[\int_{S^2} \int_{S^2} ds \right]$$

$$= e^{-t} \cdot t$$

$$2 \stackrel{3t}{\sim} 13$$

$$37. \frac{3}{5^2+65+18}$$

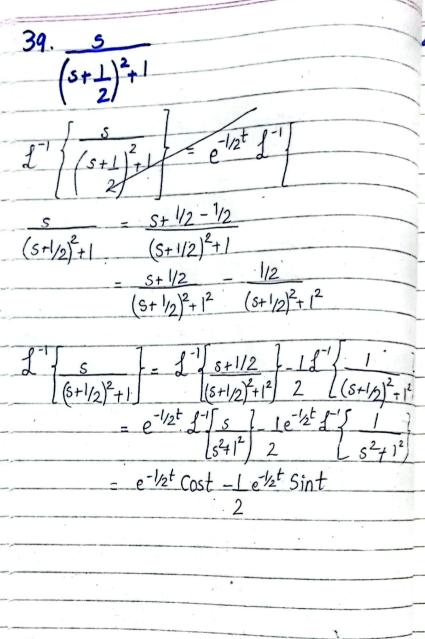
$$\frac{3}{5^2 + 65 + 18} = \frac{3}{(5^2 + 2(5)(3) + 3^2) + 9}$$

38.
$$\frac{4}{5^2-25-3}$$

$$\frac{4}{s^2 - 2s - 3} = \frac{4}{(s^2 - 2s + 1) - 1 - 3}$$

$$\begin{cases} (s-1)^{2} - (2)^{2} \\ \begin{cases} -1 \\ 4 \end{cases} = \begin{cases} -1 \\ 5^{2} - 2s - 3 \end{cases} = \begin{cases} -1 \\ (s-1)^{2} - (2)^{2} \end{cases} = 2e^{t} \int_{-1}^{1} \frac{2}{2}$$

$$= 2e^{t} \int_{-\infty}^{\infty} \frac{2}{s^{2} - (2)^{2}}$$



40. 52+5+1/2 52+5+1/2 (5+1/2)2+1/4 (S+1/2)2+ (1/2)2 52+5+112 2 e-2+ 1-1 2e-12t. 21-1