Realice los siguientes ejercicios.

1. $\mathcal{L}\{4e^{5t} + 6t^3 - 3\operatorname{sen} 4t + 2\cos 2t\}$
2. $\mathcal{L}\{t^2e^{3t}\}$
   - Por Traslación
   - Multiplicación por t^n
3. $\mathcal{L}\{e^{-2t}\operatorname{sen} 4t\}$
4. $\mathcal{L}\{e^{4t}\cos 5t\}$;
5. $\mathcal{L}\{e^{-2t}(3\cos 6t - 5\operatorname{sen} 6t)\}$
7. $\mathcal{L}\{t\operatorname{sen} at\}$
8. $\mathcal{L}\{t^2\cos at\}$
9. $\mathcal{L}\{3e^{-2t}\}$
10. $\mathcal{L}\{5t - 3\}$
11. $\mathcal{L}\{2t^2 - e^{-t}\}$
12. $\mathcal{L}\{3\cos 5t\}$
13. $\mathcal{L}\{10\operatorname{sen} 6t\}$
14. $\mathcal{L}\{6\operatorname{sen} 2t - 5\cos 2t\}$
15. $\mathcal{L}\{(t^2+1)^2\}$
16. $\mathcal{L}\{(\operatorname{sen} t - \cos t)^2\}$
17. $\mathcal{L}\{(5e^{2t} - 3)^2\}$
18. $\mathcal{L}\{4\cos^2 2t\}$
19. $\mathcal{L}\{2e^{4t}\}$
20. $\mathcal{L}\{3t^4 - 2t^3 + 4e^{-3t} - 2\operatorname{sen} 5t + 3\cos 2t\}$
21. $\mathcal{L}\{t^3e^{-3t}\}$
22. $\mathcal{L}\{e^{-t}\cos 2t\}$
23. $\mathcal{L}\{2e^{3t}\operatorname{sen} 4t\}$
24. $\mathcal{L}\{(t+2)^2e^t\}$
25. $\mathcal{L}\{e^{2t}(3\operatorname{sen} 4t - 4\cos 4t)\}$
26. $\mathcal{L}\{e^{-t}\operatorname{sen}^2 t\}$
27. $\mathcal{L}\{(1+te^{-t})^3\}$
28. $Si\ \mathcal{L}\{F(t)\} = \dfrac{s^2 - s + 1}{(2s+1)^2(s-1)}$, $halle\ \mathcal{L}\{F(2t)\}$
29. $Si\ \mathcal{L}\{F(t)\} = \dfrac{e^{-1/s}}{s}$, $halle\ \mathcal{L}\{e^{-t}F(3t)\}$
30. $\mathcal{L}\{t(3\operatorname{sen} 2t - 2\cos 2t)\}$
31. $\mathcal{L}\{t^2\operatorname{sen} t\}$
32. $\mathcal{L}\{t^2\cos t\}$
33. $\mathcal{L}\{(t^2 - 3t + 2)\operatorname{sen} 3t\}$
34. $\mathcal{L}\{t^3\cos t\}$

Respuestas:

1. $\frac{4}{s-5}+\frac{36}{s^4}-\frac{12}{s^2+16}+\frac{2s}{s^2+4}$
2. $\frac{2}{(s-3)^3}$
3. $\frac{4}{(s+2)^2+16}=\frac{4}{s^2+4s+20}$
4. $\frac{s-4}{(s-4)^2+25}=\frac{s-4}{s^2-8s+41}$
5. $\frac{3(s+2)-30}{(s+2)^2+36}=\frac{3s-24}{s^2+4s+40}$

7. $\frac{2as}{(s^2+a^2)^2}$
8. $\frac{2s^3-6a^2s}{(s^2+a^2)^3}$
9. $\frac{3}{s+2}, \quad s>-2$
10. $\frac{5-3s}{s^2}, \quad s>0$
11. $\frac{(4+4s-s^3)}{s^3(s+1)}, \quad s>0$
12. $\frac{3s}{s^2+25}, \quad s>0$
13. $\frac{60}{s^2+36}, \quad s>0$
14. $\frac{12-5s}{s^2+4}, \quad s>0$
15. $\frac{s^4+4s^2+24}{s^5}, \quad s>0$
16. $\frac{s^2-2s+4}{s(s^2+4)}, \quad s>0$
17. $\frac{25}{s-4}-\frac{30}{s-2}+\frac{9}{s}, \quad s>4$
18. $\frac{2}{s}+\frac{2s}{s^2+16}, \quad s>0$
19. $\frac{2}{s-4}$

20. $\frac{72}{s^5} - \frac{12}{s^4} + \frac{4}{s+3} - \frac{10}{s^2+25} + \frac{3s}{s^2+4}$
21. $\frac{6}{(s+3)^4}$
22. $\frac{s+1}{s^2+2s+5}$
23. $\frac{8}{s^2-6s+25}$
24. $\frac{4s^2-4s+2}{(s-1)^3}$
25. $\frac{20-4s}{s^2-4s+20}$
26. $\frac{2}{(s+1)(s^2+2s+5)}$
27. $\frac{1}{s} + \frac{3}{(s+1)^2} + \frac{6}{(s+2)^3} + \frac{6}{(s+3)^4}$
28. $\frac{s^2-2s+4}{4(s+1)^2(s-2)}$
29. $\frac{e^{-3/(s+1)}}{s+1}$
30. $\frac{8+12s-2s^2}{(s^2+4)^2}$
31. $\frac{6s^2-2}{(s^2+1)^3}$
32. $\frac{2s^3-6s}{(s^2+1)^3}$
33. $\frac{6s^4-18s^3+126s^2-162s+432}{(s^2+9)^3}$
34. $\frac{3s^4-36s^2+6}{(s^2+1)^4}$