$$\mathcal{L}\{t^2 - 3t - 2e^{-t}\sin 3t\}$$

$$\mathcal{L}\{e^{3t}\sin 6t - t^3 + e^t\}$$

*determine the inverse Laplace transform
of the given function*

$$\frac{6}{(s-1)^4}$$

$$\frac{s+1}{s^2 + 2s + 10}$$

$$\frac{1}{s^2 + 4s + 8}$$

$$\frac{2s + 16}{s^2 + 4s + 13}$$

$$\frac{3s - 15}{2s^2 - 4s + 10}$$

*determine the partial fraction expansion
for the given rational function*

$$\frac{s^2 - 26s - 47}{(s-1)(s+2)(s+5)}$$

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

$$\frac{8s - 2s^2 - 14}{(s+1)(s^2 - 2s + 5)}$$