Recall the following properties of the Laplace transform:

(i) \( \mathcal{L}\{e^{at}\}(s) = \frac{1}{s-a} \)

(ii) \( \mathcal{L}\{\cos bt\}(s) = \frac{s}{s^2 + b^2}, \quad \mathcal{L}\{\sin bt\}(s) = \frac{b}{s^2 + b^2} \)

(iii) \( \mathcal{L}\{e^{at} f(t)\}(s) = F(s-a) \)

1. Compute the inverse Laplace transform of \( Y(s) = \frac{3}{2 - 6s} \). (Factor, then use (i).)

2. Compute the inverse Laplace transform of \( Y(s) = \frac{1}{(s-3)(s+1)} \). (Partial fractions, then use (i).)
3. Compute the Laplace transform of $Y(s) = \frac{1}{s^2 + 4s + 13}$. (Complete the square, then factor and use (ii) and (iii).)

4. Compute the inverse Laplace transform of $Y(s) = \frac{s}{s^2 + 4s + 13}$. (Complete the square, then factor and use (ii) and (iii).)