```
inhom = y''[x] - 2 * y'[x] - 3 * y[x] == 2 * Exp[-x] * Cos[x] + x * Exp[3 * x];
hom = y''[x] - 2 * y'[x] - 3 * y[x] == 0;
Shom = DSolve[hom, y[x], x]

Shom = y[x] /. Shom[[1]]

y1 = Shom /. {C[1] → 1, C[2] → 0}
y2 = Shom /. {C[1] → 0, C[2] → 1}

Wronskiaan = Det[{{y1, y2}, {D[y1, x], D[y2, x]}}]

yp = -y1 * Integrate[y2 * (2 * Exp[-x] * Cos[x] + x * Exp[3 * x]) / Wronskiaan, x] +
   y2 * Integrate[y1 * (2 * Exp[-x] * Cos[x] + x * Exp[3 * x]) / Wronskiaan, x]

gsol1 = Shom + yp // Simplify

gsol2 = (y[x] /. (DSolve[inhom, y[x], x])[[1]]) // Simplify

If[gsol1 == gsol2, Print["sol are equal"], Print["sol are not equal"]]
```