Given that:

Integrating both sides we obtain the final result:

Let be the number of grams of C present at time (minute). Due to the fact that 1 gram of A and 4 grams of B used to combine C, therefore, the amount of A and B used are , respectively.

The amount of remain chemical A:

The amount of remain chemical B:

The problem tells us that the rate of formed chemical C depends on the proportional product of instantaneous amount of A and B not converted to C. It means that:

Integrating both sides we get:

With the initial condition:

From (1) solve for , we get:

Therefore: grams

Given that:

With the initial condition: , it leads to:

Hence, the solution of the equation is:

Or:

Given that:

Where:

Characteristic equation of the given ODE:

So, the complement solution is:

Since the right hand side of the given equation has two terms and , therefore the particular solution also has two term: , respectively.

Solve fore from:

Since, is a double root of characteristic equation.

So, has the following form:

Substituting into the equation we obtain:

Therefore:

Solve fore from:

Since, is not a root of characteristic equation.

So, has the following form:

Substituting into the equation we obtain:

Therefore:

So:

Thus, the general solution of the given differential equation is:

Given that:

Characteristic equation of the given DE:

So, the complement solution is:

Multiply both sides of by , we get:

Integrating both sides, it leads to:

Multiply both sides of by again, we get:

Integrating both sides, it leads to:

Comparing (1) and (2), we obtain the particular solution: