Simple program for checking the answer to
an Ordinary Differential Equation.

1. Restart your "engine."

> restart;

2. Enter the ODE with a label, in this case ode01.
This is a problem that we worked in class today.

> ode01 := diff(y(x),x)+5*y(x)=sin(x);

    ode01 := \( \frac{dy(x)}{dx} + 5 \ y(x) = \sin(x) \)

3. If I have worked the problem out by hand (which I did
in the notes), then I can simply enter my solution, as in
the second line below.

The "dsolve" line, right below this is just to show you how to
solve the ODE if you are to busy (or lazy) to solve it with
your own brain -- and actually, if you are working for a "client,"
it is your responsibility to get the answers as quickly and
efficiently as you can, so the computer is the way to go.

> dsolve(ode01,y(x));

    y(x) = \( - \frac{1}{26} \ \cos(x) + \frac{5}{26} \ \sin(x) + e^{-5 \ x} \) \_C1

> solution := y(x)=-1/26*cos(x)+5/26*sin(x)+exp(-5*x); 

    solution := y(x) = \( - \frac{1}{26} \ \cos(x) + \frac{5}{26} \ \sin(x) + e^{-5 \ x} \)

4. Anyway, what I really wanted to show you in this worksheet is the following
command, odetest. The syntax is odetest(your_ans, the_original_equation).
If the answer is zero (as below), then your_ans is correct. If the answer is 1,
then ... well, either your_ans is wrong OR the MAPLE program wasn't able
to affirm it as correct.... More work needs to be done.

In this case, the answer to the odetest is zero; therefore the solution is correct.

```r
> odetest(solution,ode01);
```

```r
0
```

```r
>
```

.................................................................