

## MAP2302: Differential Equations.

<http://www.imathesis.com/map2302.html>

Practice 8.

**Topics:** 4.6 Variation of Parameters.

Note: Solution of the form:  $y_p(t) = v_1 y_1 + v_2 y_2$  where  $v_1$  and  $v_2$  are functions of the independent variable.

$$v_1 = \int \frac{-y_2 \cdot f(t)}{W}$$

$$v_2 = \int \frac{y_1 \cdot f(t)}{W}$$

W is the Wronskian determinant.

Exercises 4.6, page 191:

Find a general solution to the differential equation using the method of variation of parameters:

1.  $y'' + 4y = \tan(2t)$

3.  $y'' - 2y' + y = t^{-1}e^t$

5.  $y''(\theta) + 16y(\theta) = \sec(4\theta)$

7.  $y'' + 4y' + 4y = e^{-2t} \ln t$

11.  $y'' + y = \tan(t) + e^{3t} - 1$

13.  $v'' + 4v = \sec^4(2t)$

15.  $y'' + y = 3 \sec(t) - t^2 + 1$

17.  $\frac{1}{2}y'' + 2y = \tan(2t) - \frac{1}{2}e^t$