

```

> restart
CASO II
> Ecuacion := y''-4 y'+4 y=0
      Ecuacion :=  $\frac{d^2}{dx^2} y(x) - 4 \left( \frac{d}{dx} y(x) \right) + 4 y(x) = 0$  (1)
> EcuaCarac := m·2 - 4 m + 4 = 0
      EcuaCarac :=  $m^2 - 4 m + 4 = 0$  (2)
> Raiz := solve(EcuaCarac)
      Raiz := 2, 2 (3)
> Sol1 := y(x) = exp(Raiz1·x)
      Sol1 := y(x) = e2x (4)
> Sol2 := y(x) = x·exp(Raiz1·x)
      Sol2 := y(x) = x e2x (5)
> SolucionGeneral := y(x) = C1·rhs(Sol1) + C2·rhs(Sol2)
      SolucionGeneral := y(x) = C1 e2x + C2 x e2x (6)
> comprobacion := simplify(eval(subs(y(x) = rhs(SolucionGeneral), Ecuacion)))
      comprobacion := 0 = 0 (7)
> SolGral := dsolve(Ecuacion)
      SolGral := y(x) = _C1 e2x + _C2 e2x x (8)
> restart
CASO III
> Ecuacion := y''+y'+y=0
      Ecuacion :=  $\frac{d^2}{dx^2} y(x) + \frac{d}{dx} y(x) + y(x) = 0$  (9)
> EcuaCarac := m·2 + m + 1 = 0
      EcuaCarac :=  $m^2 + m + 1 = 0$  (10)
> Raiz := solve(EcuaCarac); evalf(%, 3);
      Raiz := - $\frac{1}{2} + \frac{1}{2} i\sqrt{3}$ , - $\frac{1}{2} - \frac{1}{2} i\sqrt{3}$ 
      -0.500 + 0.865 I, -0.500 - 0.865 I (11)
> SolucionGeneral := y(x) = C1·exp(Re(Raiz1)·x)·cos(Im(Raiz1)·x) + C2·exp(Re(Raiz1)
      ·x)·sin(Im(Raiz1)·x)
      SolucionGeneral := y(x) = C1 e- $\frac{1}{2}$ x cos( $\frac{1}{2}\sqrt{3}x$ ) + C2 e- $\frac{1}{2}$ x sin( $\frac{1}{2}\sqrt{3}x$ ) (12)
> comprobacion := simplify(eval(subs(y(x) = rhs(SolucionGeneral), Ecuacion)))
      comprobacion := 0 = 0 (13)
>
>
>
>

```

L>