$$D^2y = -4Ax^3\cos 2x - 4Bx^3 \operatorname{sen} 2x + (12B-4C)x^2\cos 2x + (-12A-4E)x^2 \operatorname{sen} 2x$$
$$+ (6A+8E-4F)x\cos 2x + (6B-8C-4G)x \operatorname{sen} 2x + (2C+4G)\cos 2x + (2E-4F)\operatorname{sen} 2x,$$

y

$$(D^2+4)y = 12Bx^2\cos 2x - 12Ax^2 \operatorname{sen} 2x + (6A+8E)x\cos 2x + (6B-8C)x \operatorname{sen} 2x$$
$$+ (2C+4G)\cos 2x + (2E-4F)\operatorname{sen} 2x = x^2 \operatorname{sen} 2x.$$

Igualando los coeficientes de los términos semejantes $-12A = 1$, $12B = 0$, $6A + 8E = 0$, $6B - 8C = 0$, $2C + 4G = 0$, $2E - 4F = 0$; de donde $A = -1/12$, $B = 0$, $C = 0$, $E = 1/16$, $F = 1/32$, $G = 0$.

Una integral particular es $y = -\frac{1}{12}x^3\cos 2x + \frac{1}{16}x^2 \operatorname{sen} 2x + \frac{1}{32}x\cos 2x$,

y la primitiva es $y = C_1\cos 2x + C_2 \operatorname{sen} 2x - \frac{1}{12}x^3\cos 2x + \frac{1}{16}x^2 \operatorname{sen} 2x + \frac{1}{32}x\cos 2x$.

PROBLEMAS PROPUESTOS

Resolver, utilizando el método de variación de parámetros.

10. $(D^2+1)y = \operatorname{cosec} x$ *Sol.* $y = C_1\cos x + C_2 \operatorname{sen} x + \operatorname{sen} x \ln \operatorname{sen} x - x\cos x$

11. $(D^2+4)y = 4\sec^2 2x$ *Sol.* $y = C_1\cos 2x + C_2 \operatorname{sen} 2x - 1 + \operatorname{sen} 2x \ln(\sec 2x + \operatorname{tg} 2x)$

12. $(D^2-4D+3)y = (1+e^{-x})^{-1}$ *Sol.* $y = C_1e^x + C_2e^{3x} + \frac{1}{2}e^{2x} + \frac{1}{2}(e^x - e^{3x})\ln(1+e^{-x})$

13. $(D^2-1)y = e^{-x} \operatorname{sen} e^{-x} + \cos e^{-x}$ *Sol.* $y = C_1e^x + C_2e^{-x} - e^x \operatorname{sen} e^{-x}$

14. $(D^2-1)y = (1+e^{-x})^{-2}$ *Sol.* $y = C_1e^x + C_2e^{-x} - 1 + e^{-x}\ln(1+e^x)$

Resolver, utilizando el método de coeficientes indeterminados.

15. $(D^2+2)y = e^x + 2$ *Sol.* $y = C_1\cos\sqrt{2}x + C_2 \operatorname{sen}\sqrt{2}x + e^x/3 + 1$

16. $(D^2-1)y = e^x \operatorname{sen} 2x$ *Sol.* $y = C_1e^x + C_2e^{-x} - e^x(\operatorname{sen} 2x + \cos 2x)/8$

17. $(D^2+2D+2)y = x^2 + \operatorname{sen} x$ *Sol.* $y = e^{-x}(C_1\cos x + C_2 \operatorname{sen} x) + \frac{1}{2}(x-1)^2 + \frac{1}{5}(\operatorname{sen} x - 2\cos x)$

18. $(D^2-9)y = x + e^{2x} - \operatorname{sen} 2x$ *Sol.* $y = C_1e^{3x} + C_2e^{-3x} - x/9 - e^{2x}/5 + \frac{1}{13}\operatorname{sen} 2x$

19. $(D^3+3D^2+2D)y = x^2 + 4x + 8$ (Emplear $Ax^3 + Bx^2 + Cx$.)

Sol. $y = C_1 + C_2e^{-x} + C_3e^{-2x} + \frac{1}{6}x^3 + \frac{1}{4}x^2 + \frac{11}{4}x$

20. $(D^2+1)y = -2 \operatorname{sen} x + 4x\cos x$ *Sol.* $y = C_1\cos x + C_2 \operatorname{sen} x + 2x\cos x + x^2 \operatorname{sen} x$

1. $(D^3 - D^2 - 4D + 4)y = 2x^2 - 4x - 1 + 2x^2e^{2x} + 5xe^{2x} + e^{2x}$

Sol. $y = C_1e^x + C_2e^{2x} + C_3e^{-2x} + \frac{1}{2}x^2 + \frac{1}{6}x^3e^{2x}$