es una integral particular de $F(D)y = \cos 2x + \cos 3x$,

$$\mathscr{Y}(z_1) + \mathscr{Y}(z_2) = \frac{1}{15}(2\cos 2x - \operatorname{sen} 2x) + \frac{1}{80}(3\cos 3x - \operatorname{sen} 3x)$$

es una integral particular de $F(D)y = \operatorname{sen} 2x + \operatorname{sen} 3x$,

$$\mathscr{R}(z_1) + \mathscr{Y}(z_2)$$

es una integral particular de $F(D)y = \cos 2x + \operatorname{sen} 3x$, e

$$\mathscr{Y}(z_1) + \mathscr{R}(z_2)$$

es una integral particular en el Problema 10.

Series de Potencias: $\sum_{n=0}^{\infty} a_n x^n = a_0 + a_1 x + a_2 x^2 + \dots + a_k x^k + \dots$

$\sum_{n=0}^{\infty} a_n (x-c)^n = a_0 + a(x-c) + a_2(x-c)^2 + \dots + a_k(x-c)^k + \dots$

PROBLEMAS PROPUESTOS

Hallar una integral particular.

26. $(D^2 + D + 1)y = e^{3x} + 6e^x - 3e^{-2x} + 5$ *Sol.* $y = e^{3x}/13 + 2e^x - e^{-2x} + 5$
27. $(D^2 - 1)y = e^x$ $y = xe^x/2$
28. $(D - 2)^2 y = e^x + xe^{2x}$ $y = e^x + x^3 e^{2x}/6$
29. $(D^4 - 1)y = \operatorname{sen} 2x$ $y = \frac{1}{15}\operatorname{sen} 2x$
30. $(D^3 + 1)y = \cos x$ $y = \frac{1}{2}(\cos x - \operatorname{sen} x)$
31. $(D^2 + 4)y = \operatorname{sen} 2x$ $y = -\frac{1}{4}x\cos 2x$
32. $(D^2 + 5)y = \cos\sqrt{5}\,x$ $y = \frac{\sqrt{5}}{10}x\operatorname{sen}\sqrt{5}\,x$
33. $(D^3 + D^2 + D + 1)y = e^x + e^{-x} + \operatorname{sen} x$ $y = \frac{1}{4}(e^x + 2xe^{-x}) - \frac{1}{4}x(\operatorname{sen} x + \cos x)$
34. $(D^2 - 1)y = x^2$ $y = -x^2 - 2$
35. $D^4(D^2 - 1)y = x^2$ $y = -\frac{1}{360}(x^6 + 30x^4)$
36. $(D^2 + 2)y = x^3 + x^2 + e^{-2x} + \cos 3x$ $y = \frac{1}{2}(x^3 + x^2 - 3x - 1) + \frac{1}{6}e^{-2x} - \frac{1}{7}\cos 3x$
37. $(D^2 - 2D - 1)y = e^x\cos x$ $y = -\frac{1}{3}e^x\cos x$
38. $(D - 2)^2 y = e^{2x}/x^2$ $y = -e^{2x}\ln x$
39. $(D^2 - 1)y = xe^{3x}$ $y = \frac{1}{32}e^{3x}(4x - 3)$
40. $(D^2 + 5D + 6)y = e^{-2x}(\sec^2 x)(1 + 2\operatorname{tg} x)$ $y = e^{-2x}\operatorname{tg} x$

Serie Taylor: $a_0 = f(c)$; $a_1 = f'(c)$; $2a_2 = f''(c)$ y en general $n!\,a_n = f^{(n)}(c)$

$$f(x) = f(c) + f'(c)(x-c) + \frac{f''(c)}{2!}(x-c)^2 + \dots + \frac{f^{(n)}(c)(x-c)^n}{n!} + \dots = \sum_{n=0}^{\infty}\frac{f^{(n)}(c)(x-c)^n}{n!}$$

En E.D. $x = D$; $c = 0$