

GABARITO DA PRIMEIRA LISTA DE EDO

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1. (a) $y = 3x + c$ (reta); $c \in R$
(b) $y = x^3 + c$ (cúbica); $c \in R$
(c) $y = \sqrt{4 - x^2} + c$ (curva onde $D = [-2, 2]$); $c \in R$
3. (a) $y = ce^{2\text{sen}x}$
(b) $y = cx$
(c) $x^3e^yy^5 = c$
(d) $y = -1 + ce^{\left(\frac{x^2}{2} - x\right)}$
(e) $y = -\frac{1}{3} \ln(3c + 3e^{-x})$
(f) $y^2 = c(1 + x^3)^{-\frac{2}{3}} - 1$
(g) $x \text{sen}x + \cos x - \ln |\text{sen} y| = c$
(h) $\sec x + e^{-y} = c$
4. (a) $y = \sqrt{x^2 - 16} - 4 \text{arc sec} \left(\frac{x}{4}\right)$
(b) $x = \sqrt{2(t - 1)e^t + 3}$
5. (a) $y = \frac{1}{4}e^{2x} + ce^{-2x}$
(b) $y = \frac{1}{2}x^5 + cx^3$
(c) $y = \frac{e^x}{x} - \frac{1}{2}x + \frac{c}{x}$
(d) $y = \frac{e^x + c}{x^2}$
(e) $y = 2\text{sen} x + c \cos x$
(f) $y = \frac{1}{2}\text{sen} x + \frac{c}{\text{sen} x}$
(g) $y = \frac{1}{3} + (x + c)e^{-x^3}$
(h) $y = \frac{4}{3}x^3 \text{cosec} x + c \text{cosec} x$
(i) $y = \left(\frac{1}{3}x + \frac{c}{x^2}\right) e^{-3x}$
(j) $y = \frac{3}{2} + ce^{-x^2}$
6. (a) $y = x(x + \ln x + 1)$
(b) $y = e^{-x}(1 - x^{-1})$

7. (a) $ct^2y^2 + ty^2 - 1 = 0$
 (b) $ct^2y^2 + 2ty^2 - 1 = 0$
 (c) $y^2 = (2t + c) \cos^2 t$
 (d) $x = cy^2 - \frac{1}{y}$
 (e) $x^2 = \frac{1}{y + cy^2}$
8. (a) $y = cx + x \ln |x|$
 (b) $y = cx^2$
 (c) $\operatorname{arctg} \left(\frac{y}{x} \right) - \ln |x| = c$
 (d) $y = cx^2(1 - cx)^{-1}$
 (e) $|y - x| = c|y + x|^3$
9. (a) $y = x + (c - x)^{-1}$
 (b) $y = x^{-1} + 2x(c - x^2)^{-1}$
 (c) $y = \operatorname{sen} x + \left(c \cos x - \frac{1}{2} \operatorname{sen} x \right)^{-1}$
10. $y = x - 1 + e^{-x}$
11. (a) $I = \frac{V}{R} (1 + ce^{-\frac{R}{L}t})$
 (b) $\frac{V}{R}$
13. Kevin vence com diferença de tempo de 0,594 segundos.