M II - 2014

Vyřešte diferenciální rovnici

(1) $\big(\sin(x)+1\big)\,y' + \cos(x)\,y = 0$

(2) $xy' = \ln(x)$

(3) $xy' + y^2 = 0$

(4) $x^2y' = 4x^2 + xy + y^2$

(5) $\big(\sin(x)+1\big)\,y' - \cos(x)\,y = 0$

(6) $\Big(x^2+1\Big)\,y' = x\,y$

(7) $xy' = y + x$

(8) $y' - 2\,y^2 = 0$

(9) $y'\sin(x)\cos^2(x) - \sin(x)\cos^2(x)\,y = 0$

(10) $\Big(x^2+x\Big)\,y' = y$

(11) $\dfrac{y'}{\sin(2x)} = \sin(x)$

(12) $y' - 2xy^2 = 0$

(13) $(2-3x)\mathrm{e}^{-y} = y'$

(14) $\Big(x^2+1\Big)\,y' = y$

(15) $3x^2\mathrm{e}^{y} - 2y' = 0$

(16) $\dfrac{y'}{\cos(2x)} = \dfrac{y}{\sin(2x)}$

(17) $x^2y' = y^2 + xy$

(18) $\dfrac{y'}{\sin(2x)} = \cos(x)$

Vyřešte diferenciální rovnici

(1) $y = \dfrac{c}{\sin(x)+1}, \quad c \in \mathbb{R}. \quad c \in \mathbb{R}.$

(2) $y = c + \dfrac{\ln^2(x)}{2}, \quad c \in \mathbb{R}.$

(3) $y = \dfrac{1}{\ln(x) - c}, \quad c \in \mathbb{R}.$

(4) $y = 2x \operatorname{tg}\left(2\left(c + \ln(x)\right)\right), \quad c \in \mathbb{R}.$

(5) $y = c\left(\sin(x)+1\right), \quad c \in \mathbb{R}. \quad c \in \mathbb{R}.$

(6) $y = c\sqrt{x^2+1}, \quad c \in \mathbb{R}.$

(7) $y = x\left(c + \ln(x)\right), \quad c \in \mathbb{R}.$

(8) $y = -\dfrac{1}{2x + c}, \quad c \in \mathbb{R}.$

(9) $y = c\,\mathrm{e}^x, \quad c \in \mathbb{R}.$

(10) $y = \dfrac{c\,x}{x+1}, \quad c \in \mathbb{R}.$

(11) $y = c + \dfrac{2}{3}\sin^3(x), \quad c \in \mathbb{R}.$

(12) $y = \dfrac{-1}{x^2 + c}, \quad c \in \mathbb{R}.$

(13) $y = \ln\left(c - \dfrac{3x^2}{2} + 2x\right), \quad c \in \mathbb{R}.$

(14) $y = c\,\mathrm{e}^{\operatorname{arctg}(x)}, \quad c \in \mathbb{R}.$

(15) $y = \ln\dfrac{2}{c - x^3}, \quad c \in \mathbb{R}.$

(16) $y = c\sqrt{\sin(2x)}, \quad c \in \mathbb{R}.$

(17) $y = \dfrac{x}{c - \ln(x)}, \quad c \in \mathbb{R}.$

(18) $y = c - \dfrac{2}{3}\cos^3(x), \quad c \in \mathbb{R}.$