

Vyřešte diferenciální rovnici

$$(1) \quad y + \operatorname{tg} \left(\frac{y}{x} \right) = xy'$$

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

$$(3) \quad xy^2 y' = y^3 - x^3$$

$$(4) \quad xy' = 3x^4 + y$$

$$(5) \quad xe^{\frac{y}{x}} + y = xy'$$

$$(6) \quad x^4 yy' - x^3 y^2 - x^2 y^3 = 0$$

$$(7) \quad xy' = y + x$$

$$(8) \quad y + \sin^2 \left(\frac{y}{x} \right) = xy'$$

$$(9) \quad x^2 y' = y^2 + xy$$

$$(10) \quad 2x^3 y' = x^3 + 5x^2 y + 3xy^2 + y^3$$

$$(11) \quad y + x \sin^2 \left(\frac{y}{x} \right) = xy'$$

$$(12) \quad xy' = y - 2x$$

$$(13) \quad x^2 y^2 y' - x^3 y - xy^3 = 0$$

$$(14) \quad xy y' = x^2 - y^2$$

$$(15) \quad xy^2 y' = x^3 + y^3$$

$$(16) \quad xy' = y (\ln(x) - \ln(y))$$

$$(17) \quad xy^3 y' = y^4 - x^2 y^2$$

$$(18) \quad x^2 y' = x^2 - xy + y^2$$

$$(19) \quad 2xy y' = y^2 - x^2$$

$$(20) \quad xy' = y(\ln(y) - \ln(x))$$

$$(21) \quad y + x \operatorname{tg} \left(\frac{y}{x} \right) = xy'$$

$$(22) \quad x^2 y' = x^2 + xy + y^2$$

$$(23) \quad y + x^2 \operatorname{tg} \left(\frac{y}{x} \right) = xy'$$

$$(24) \quad 2xy y' = y^2 + x^2$$

$$(25) \quad xy y' = y^2 + x^2$$

$$(26) \quad \sqrt{x^2 - y^2} = xy' - y$$

$$(27) \quad xe^{-\frac{y}{x}} + y = xy'$$

$$(28) \quad -2x^3 y' = x^3 + x^2 y + 3xy^2 + y^3$$

$$(29) \quad y' = \frac{y}{x} - 2x$$

$$(30) \quad \frac{y'}{x} = \frac{y}{x^2} - \frac{1}{y}$$

Výřešte diferenciální rovnici

$$(1) \quad y = x \arcsin \left(e^{\frac{cx-1}{x}} \right), \quad c \in \mathbb{R}.$$

$$(2) \quad y = 2x \operatorname{tg} \left(\ln(cx^2) \right), \quad c > 0, c \in \mathbb{R}.$$

$$(3) \quad y = x^3 \sqrt{\ln \left(\frac{c}{x^3} \right)}, \quad c \in \mathbb{R}.$$

$$(4) \quad y = cx + x^4, \quad c \in \mathbb{R}.$$

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

$$(6) \quad y = \frac{-x}{\ln(cx)}, \quad c \in \mathbb{R}.$$

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

$$(8) \quad y = x \operatorname{arccotg} \left(\frac{cx+1}{x} \right), \quad c \in \mathbb{R}.$$

$$(9) \quad y = \frac{x}{c - \ln(x)}, \quad c \in \mathbb{R}.$$

$$(10) \quad y = -x \pm x \sqrt{\frac{-1}{\ln(cx)}}, \quad c \in \mathbb{R}.$$

$$(11) \quad y = x \operatorname{arccotg} \left(\ln \left(\frac{c}{x} \right) \right), \quad c \in \mathbb{R}.$$

$$(12) \quad y = x \ln \left(\frac{c}{x^2} \right), \quad c \in \mathbb{R}.$$

$$(13) \quad y = \pm x \sqrt{\ln(cx^2)}, \quad c \in \mathbb{R}.$$

$$(14) \quad y = \pm \frac{\sqrt{2x^4 - c}}{2x}, \quad c \in \mathbb{R}.$$

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

$$(16) \quad y = x e^{\frac{c}{x}-1}, \quad c \in \mathbb{R}.$$

$$(17) \quad y = \pm x \sqrt{-\ln(cx^2)}, \quad c \in \mathbb{R}.$$

$$(18) \quad y = \frac{x(\ln(cx) - 1)}{\ln(cx)}, \quad c \in \mathbb{R}.$$

$$(19) \quad y = \pm \sqrt{cx - x^2}, \quad c \in \mathbb{R}.$$

$$(20) \quad y = x e^{cx+1}, \quad c \in \mathbb{R}.$$

$$(21) \quad y = x \arcsin(cx), \quad c \in \mathbb{R}.$$

$$(22) \quad y = x \operatorname{tg}(\ln(cx)), \quad c \in \mathbb{R}.$$

$$(23) \quad y = x \arcsin(c e^x), \quad c \in \mathbb{R}.$$

$$(24) \quad y = \pm \sqrt{cx - x^2}, \quad c \in \mathbb{R}.$$

$$(25) \quad y = \pm x \sqrt{\ln(cx^2)}, \quad c \in \mathbb{R}.$$

$$(26) \quad y = x \sin(\ln(cx)), \quad c \in \mathbb{R}.$$

$$(27) \quad y = x \ln(\ln(cx)), \quad c \in \mathbb{R}.$$

$$(28) \quad y = -x \pm x \frac{1}{\sqrt{\ln(cx)}}, \quad c \in \mathbb{R}.$$

$$(29) \quad y = cx - 2x^2, \quad c \in \mathbb{R}.$$

$$(30) \quad y = \pm x \sqrt{c - \ln(x^2)}, \quad c \in \mathbb{R}.$$