

EXERCISES 12.2 (submit by 03.07.2015)

1. Find general solutions to the following ODEs. (If the explicit solution is difficult to find, provide the implicit solution.) After that, write their particular solutions which satisfy the given additional condition.

(a) $y' = 3\sqrt[3]{y^2}$; $y(2) = 0$.

[Note that in this case the particular solution is not unique!]

(b) $y' = e^{x+y}$; $y'(1) = 1$.

(c) $y' \cot x + y = 2$; $\lim_{x \rightarrow 0} y(x) = -1$.

(d) $xy' + y = y^2$; $y(1) = \frac{1}{2}$.

(e) $3y^2y' + 16x = 2xy^3$; $y(x)$ is bounded for all $x \in \mathbb{R}$.

(f) $y' - y = 2x - 3$; $y(0) = 1$.