§: 1.3 SEPARATION OF VARIABLES

Determine which of the following ODEs are separable, and solve them. If it is not separable, leave it alone. Remember to check that your solution is correct. In some cases it may be simpler not to solve for y as a function of t, but rather leave your solution in implicit form.

(1) $$y' = t - y$$

(2) $$y' = y/t$$

(3) $$y' = t^2 + y^2$$

(4) $$y' = 1/t$$

(5) $$y' = y(2 - y)$$

(6) $$y' = t + 2y$$

(7) $$y' = ty$$

(8) $$y' = ty^2$$

(9) $$y' = -\sqrt{y}$$

(10) $$y' = (y - 1)(y - 2)$$

(11) $$y' = \frac{yt - y}{t}$$

(12) $$y' = \frac{t - y}{2t + y}$$

(13) $$y' = t^2 - y^2$$

(14) $$\frac{dy}{dt} = \frac{y + 1}{t}$$

(15) $$\frac{dy}{dt} = \exp(y + t)$$

(16) $$\frac{dy}{dt} = y^2 t^2$$

(17) $$\frac{dy}{dt} = \frac{y^2 + y}{t}$$

(18) $$\frac{dy}{dt} = 3$$