Exercise 4

For the following exercises, sketch the curves below by eliminating the parameter t. Give the orientation of the curve.

$$x = 3 - t, \; y = 2t - 3, \; 1.5 \le t \le 3$$

Solution

Since the first equation is simpler, solve it for t

$$t = 3 - x$$

and plug it into the second equation.

$$y = 2(3 - x) - 3$$
$$= (6 - 2x) - 3$$
$$= 3 - 2x$$

The graph is of a line with slope -2 and y-intercept $(0, 3)$. Plugging in $t = 2$ gives $x = 1$ and $y = 1$, and plugging in $t = 3$ gives $x = 0$ and $y = 3$. The orientation therefore goes from the bottom to the top.