Consider the ODE \( y' = 2y + t \).

(a) Draw the \( ty \)-plane (i.e., \( t \) on the \( x \)-axis, and \( y(t) \) on the \( x \)-axis). Draw a dot at each integer lattice point at each \((t, y)\), where \( t, y = -1, 0, 1 \).

(b) At each of these nine points, compute \( y'(t) \). On the \( ty \)-plane, draw a “hash mark” at \((t, y)\) with slope \( y'(t) \).
(c) Now, we will use a better method to sketch the slope field. Determine the set of points for which \( y' = 0 \) (it will be a line – set \( y' = 0 \) and solve for \( y \)).

(d) Repeat the previous step except for \( y' = c \), for various values of \( c \): 1, 2, 3, \(-1\), \(-\frac{1}{2}\).

(e) Sketch the lines you found above on the \( ty \)-plane. Along each line, sketch the hash-marks of the corresponding slope, \( y' = c \).

(f) In the slope field above, sketch the three particular solution curves that satisfy \( y(0) = 1 \), \( y(0) = -\frac{3}{4} \), and \( y(1) = -\frac{3}{4} \), respectively.