MCS 121 – Calculus I
Linear Functions

1. The equation for converting Celsius temperature to Fahrenheit temperature is a linear equation (its graph is a line). Find the equation which gives Fahrenheit temperature in terms of Celsius temperature (Celsius temperature will be the independent variable). Is there a temperature at which a Fahrenheit thermometer gives the same reading as a Celsius thermometer? (Water boils at 212°F and 100°C. Water freezes at 32°F and 0°C.)

2. Let k be a constant. The equation $2x + ky = -k$ is the equation of a line. What values of k (if any) allow the line to have the property:

   (a) The line has slope 3.

   (b) The line passes through the point $(0, 1)$.

   (c) The line is horizontal.

   (d) The line is vertical.

   (e) The line passes within one unit of the origin.