

Finite Mathematics, Summer 2010, quiz #1, Tuesday July 06

1. Find the coordinates of the points that are 10 units away from the origin and have a y -coordinate equal to -6 .
2. Find an equation of the horizontal line that passes through $(-4, -3)$.
3. Find the equation of the lines described below, and draw all of them in one Cartesian coordinate system:
 - l_1 : a point-slope form of the line passing through points $(1, 3)$ and $(-1, -1)$
 - l_2 : the slope-intercept form of the line parallel to l_1 , and passing through origin
 - l_3 : a general form of the line perpendicular to l_1 , and passing through origin
 - Is l_3 perpendicular to l_2 ?
 - Find x -intercept and y -intercept of l_1
4. Find all the solutions of the system of the linear equations:

$$\begin{cases} y = -4x - 7 \\ -y = x + 10 \end{cases}$$

5. The relationship between temperature measured in Celsius scale and the Fahrenheit scale is linear. The freezing point is 0°C and 32°F , and the boiling point is 100°C and 212°F .
 - Find an equation giving the relationship between the temperature F measured in Fahrenheit scale and the temperature C measured in the Celsius scale. (*Hint: Consider F and C as x, y on the Cartesian coordinate system*)
 - Find F as a function of C and use this formula to determine the temperature in Fahrenheit corresponding to a temperature of 20°C .
6. Find the line of the least squares for the data set, and estimate the value at the point $x = 2$:

$$\begin{array}{cccc} x & 0 & 1 & 3 \\ y & 1 & 0 & 3 \end{array}$$

7. (*optional*) Prove: If the distance between the points $P_1(a, b)$ and $P_2(c, d)$ is D , then the distance between the points $P_3(ka, kb)$ and $P_4(kc, kd)$ is given by $|k|D$.