NAME _____

MATH 101: FALL 2020	QUIZ 2

You are allowed one page of notes and a calculator. No phones. More than 25pts to earn. $\boxed{\textit{Box}}$ *your answers for full credit and show work. Thanks!*

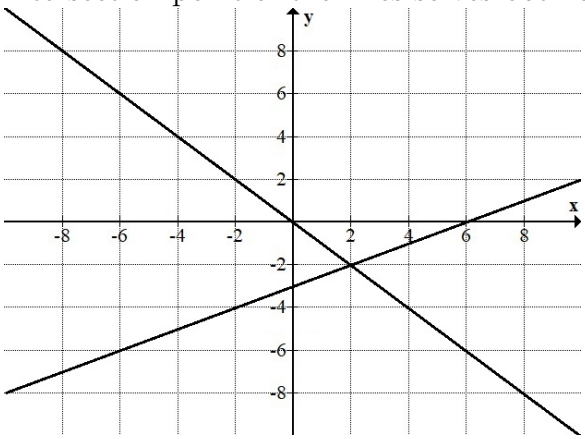
Problem 1: (4pts) Solve $\begin{array}{l} 2x + y = 9 \\ 3x - y = -4 \end{array}$.

Problem 2: (4pts) Solve $\begin{array}{l} 3x + 4y = 5 \\ 5x + 6y = 9 \end{array}$.

Problem 3: (2pts) Determine if $(1, 2)$ is a solution of the system of equations: $\begin{array}{l} x + y = 3 \\ x - y = 2 \end{array}$

Problem 4: (2pts) A fence is made such that its width is twice its length. In addition, the fence is constructed with 43 ft of fence. Find the length and width. *Hint: let the length be x and the width be y, find two equations and two unknowns which x and y must solve.*

Problem 5: (3pts) Find two linear equations whose graphs are the lines given below. Also, verify the intersection point of the lines solves both equations.



Problem 6: (2pts) Let $P(x) = 2x^3 - 3x^2 + 7$. Calculate $P(2)$ and $P(-1)$.

Problem 7: (7pts) Factor each polynomial below completely over $\mathbb{R}$,

(a.) $x^2 - 37$

(b.) $3x^2 + 6x + 3$

(c.) $2x^2 - 11x + 5$

(d.) $x^3 + 4x^2$

(e.) $x^3 - 27$

(f.) $x^4 - 81$

(g.) $x^4 - 5x^2 + 4$

Problem 8: (2pts) Complete the square for $f(x) = x^2 + 6x - 20$ and factor $f(x)$ completely.

Problem 9: (1pts) Solve $x^2 + 6x - 20 = 0$

Problem 10: (3pts) The disciminant for $f(x) = ax^2 + bx + c$ is $b^2 - 4ac$. Calculate the discriminant for each $f(x)$ given below and factor $f(x)$ over $\mathbb{R}$ if possible.

(a.) $x^2 + 4x + 5$

(b.) $x^2 + 10x - 13$

(c.) $x^2 - 6x + 9$