NAME _____

MATH 101: FALL 2020	TEST 2

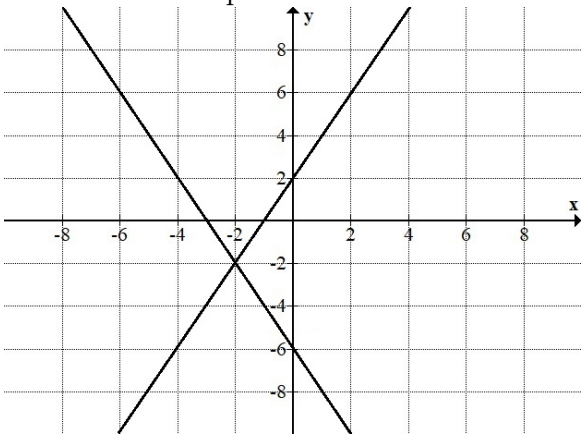
You are allowed one page of notes and a calculator. No phones. More than 25pts to earn. $\boxed{\textit{Box}}$ *your answers for full credit and show work. Thanks!*

Problem 1: (15pts) Solve $\begin{array}{l} x+2y=5 \\ x-5y=-9 \end{array}$.

Problem 2: (15pts) Solve $\begin{array}{l} 4x+5y=26 \\ 6x+7y=38 \end{array}$.

Problem 3: (15pts) Solve $\begin{matrix} x + 2y = 3 \\ 2x + 4y = 4 \end{matrix}$.

Problem 4: (15pts) Find two linear equations whose graphs are the lines given below. Also, verify the intersection point of the lines solves both equations.



Problem 5: (10pts) Let $P(x) = 3x^3 + 2x + 1$. Calculate $P(1)$ and $P(-1)$.

Problem 6: (10pts) A fence is made such that its width is 20 feet longer than its length. In addition, the fence is constructed with 65 ft of fence. Find the length and width.

Problem 7: (10pts) Complete the square for $f(x) = x^2 + 4x + 6$ and factor $f(x)$ completely.

Problem 8: (10pts) Solve $x^2 + 6x - 20 = 0$

Problem 9: (60pts) Factor each polynomial below completely over $\mathbb{R}$,

(a.) $x^3 - 16x$

(b.) $x^2 + 6x + 9$

(c.) $2x^2 + 15x + 7$

(d.) $x^3 - 1$

(e.) $x^4 - 16$

(f.) $x^4 - x^2 - 6$