Name: _____

MATH 101
Fall 2022
HW 20: Due 11/30

"The philosophy of the school room in one generation will be the philosophy of government in the next."

–Abraham Lincoln

Problem 1. (10pt) For each of the following quadratic functions, i.e. functions which can be written as $f(x) = ax^2 + bx + c$, identify a, b, c:

(a) $2x^2 - 5x + 7$

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

(c) $x^2 - 16$

(d) $(x + 1)^2$

(e) $(x - 2)(x + 3)$

Problem 2. (10pt) Consider the quadratic function $f(x) = 4 - (x-2)^2$.

(a) Determine if the given parabola opens upwards or downwards.

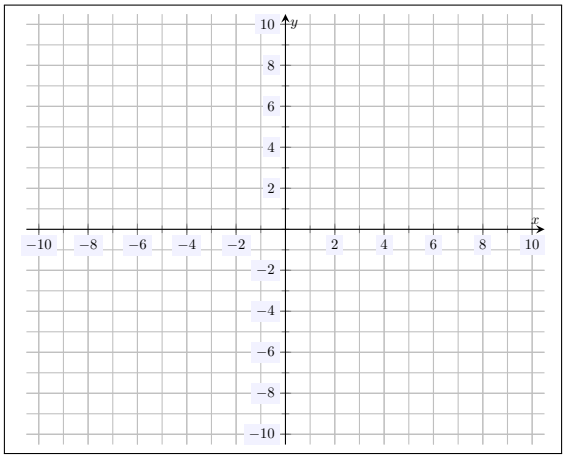
(b) Is the parabola convex or concave?

(c) Does the function $f(x)$ have a maximum or a minimum?

(d) Find the vertex and axis of symmetry.

(e) Find the maximum or minimum value of $f(x)$.

(f) Sketch a graph of $f(x)$ on the plot below.



Problem 3. (10pt) Showing all your work, put $f(x) = 2x^2 - 12x - 13$ into vertex form. Also, find the vertex and axis of symmetry for $f(x)$.