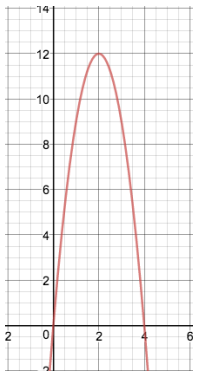
ACMAT117 Fall 2024
Professor Manguba-Glover
Homework 7 Name: _____

Show all work and simplify all answers before circling/boxing them. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

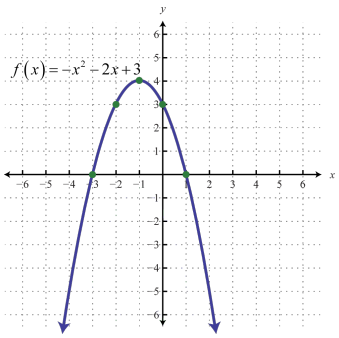
Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

(1) Use the graph to find the following



(a) Sign of the leading coefficient
(b) Vertex coordinates
(c) Axis of symmetry equation
(d) Intervals where f is increasing and where f is decreasing
(e) Domain and range in interval notation

(2) Use the graph to find the following



(a) Sign of the leading coefficient
(b) Vertex coordinates
(c) Axis of symmetry equation
(d) Intervals where f is increasing and where f is decreasing
(e) Domain and range in interval notation

(3) Identify whether the function is linear, quadratic, or neither:

(a) $f(x) = 1 - 2x + 3x^2$

(b) $f(x) = (x^2 + 1)^2$

(c) $f(x) = \frac{1}{2}x + 4$

(d) $f(x) = \frac{1}{x}$

(4) Identify the coordinates of the vertex, then convert the vertex equation to standard form:

$$f(x) = -3(x - 1)^2 + 2$$

(5) Identify the coordinates of the vertex, then convert the vertex equation to standard form:

$$f(x) = 5(x + 2)^2 - 5$$

(6) Identify the coordinates of the vertex, then convert the vertex equation to standard form:

$$f(x) = -5(x - 4)^2$$

(7) Convert the quadratic equation from standard form to vertex form: $f(x) = x^2 - 3x$

(8) Convert the quadratic equation from standard form to vertex form: $f(x) = x^2 - 7x + 5$

(9) Convert the quadratic equation from standard form to vertex form: $f(x) = 2x^2 - 8x - 1$

(10) Convert the quadratic equation from standard form to vertex form: $f(x) = 3x^2 + 6x + 2$