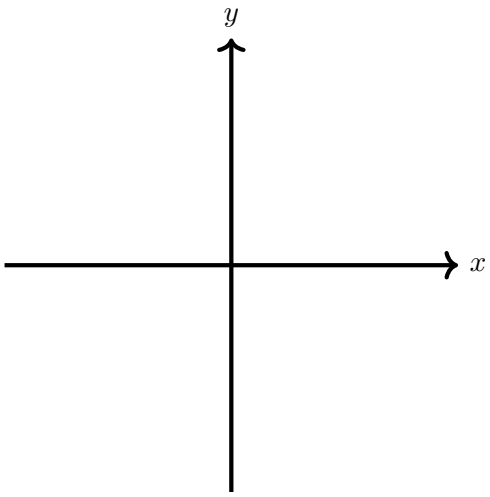
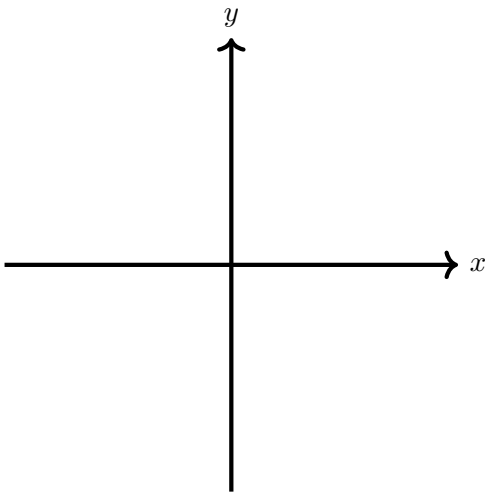
ALGEBRA 2 HONORS
PROBLEM SET #13

DUE DATE: OCTOBER 23, 2023

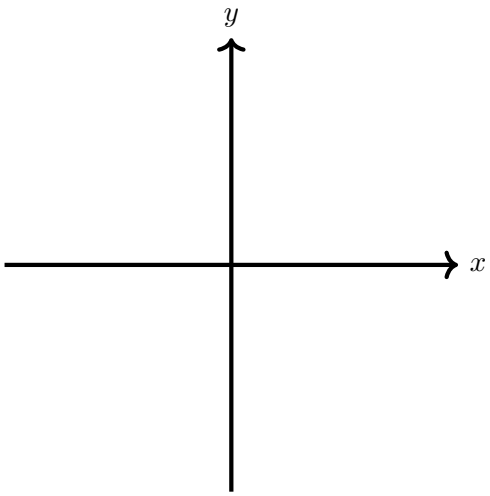
Question 1. Let $f(x) = 2(x+3)(x-1)$. Find the vertex, x-intercepts, and the y-intercept. Draw a graph of $f(x)$ below (label the points you found).



Question 2. Let $g(x) = -2(x-5)(x+3)$. Find the vertex, x-intercepts, and the y-intercept. Draw a graph of $g(x)$ below (label the points you found).



Question 3. Let $h(x) = \frac{1}{2}(x+2)^2$ Find the vertex, x-intercepts, and the y-intercept. Draw a graph of $h(x)$ below (label the points you found).



Question 4. Let $f(x) = x^2 + 4x + 3$. Find the vertex of $f(x)$ by completing the square. (Hint: rewrite $f(x)$ into $f(x) = A(x+h)^2 + k$ where $h = b/2a$...the vertex will be $(-h, k)$.)

Question 5. Suppose $f(x) = ax^2 + bx + c$ has x-intercepts at $x = 4, -3$ and passes through the point $(2, -20)$. What is the value of a, b, c?

Question 6. Suppose $f(x) = ax^2 + bx + c$ has x-intercepts at $x = 5, 1$ and passes through $(2, -9)$. What is the value of a, b, c?

Question 7. Factor the following:

(a) $x^2 + 10x + 24$
(b) $x^2 - 2x - 8$
(c) $x^2 - 7x + 12$
(d) $16 - 10x + x^2$
(e) $20 - x - x^2$
(f) $3x^3 - 3x^2 - 18x$
(g) $3x^2 + 10x + 3$
(h) $2x^2 - 7x + 3$
(i) $2x^2 - x - 6$
(j) $10 - t - 3t^2$

Question 8. Let $f(x) = (x+1)^2 + 3(x+1) + 2$. Find the x-intercepts of $f(x)$ by rewriting $f(x)$ by expanding it out, simplifying it, then writing it in factored form.