

Exam 2 – (50 points)

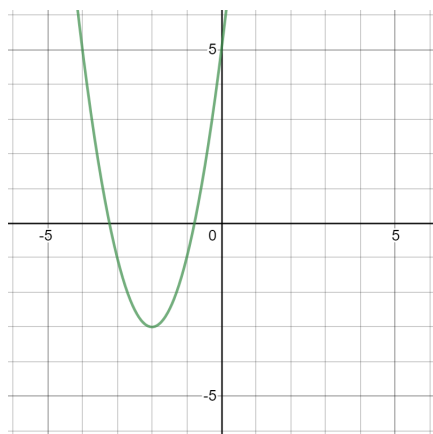
Directions: Work each problem on your own paper **showing sufficient work to justify your solutions**. You must make progress toward a correct solution in order to receive partial credit. Upload your work to Moodle when you are finished.

1. (6 points) Find the solution to the inequality. Write your answer in interval notation.

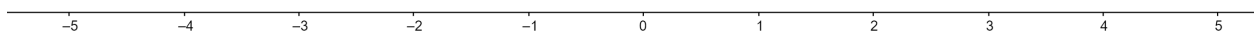
$$\frac{(x-5)(2-x)}{(x+3)^2(x+1)} \geq 0$$

2. (6 points) Find the domain for $f(x) = \sqrt{x^2 - 2x - 8}$. Write your answer in interval notation.

3. (6 points) Give the equation of the function shown in the graph below.

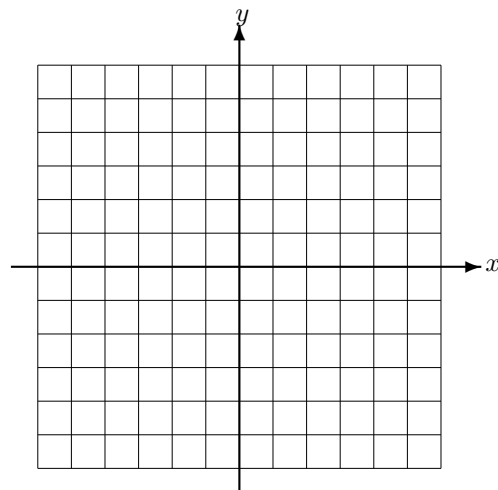


4. (6 points) Provide a rough sketch of the curve $y = (x - 2)^3(x + 1)^2(x - 3)^2(1 - x)$. Make sure all roots are identified, the graph is positive and negative in the correct intervals, and the curve has the correct general shape.

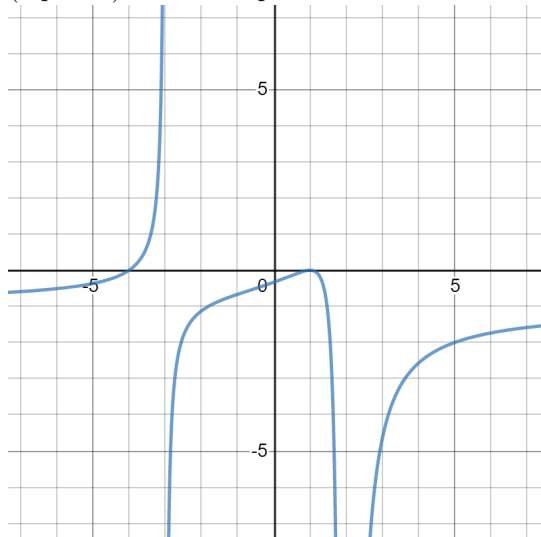


5. (8 points) Consider the function $g(x) = \frac{(x+1)^2(1-x)}{(x+3)(x-2)^2}$. Answer the questions below and sketch the graph.

- What are the roots?
- What are the vertical asymptotes?
- Are there any holes? If so, where?
- Is there a horizontal asymptote? If so, where?



6. (6 points) Give the equation of the rational function plotted below.



7. (6 points) A workshop makes small crafts. If they make x per day, they can sell each of them for a price, in dollars, given by $p = 200 - 4x$. Determine the number they should make to maximize their revenue.

8. (6 points) A farmer wishes to enclose a rectangular area divided into two sections as shown in the figure below. One side of the region will be an existing wall. The rest will be constructed using 1500 feet of fencing. What dimensions will enclose the maximum possible area?

