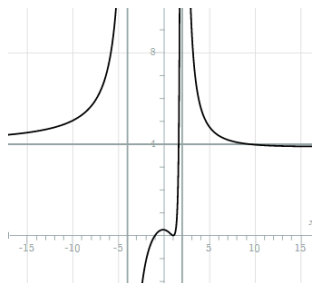


Goals



By the end of this unit, students will:

- understand the concepts and techniques in vectors, complex numbers, functions and graph sketching
- apply reasoning skills and solve problems in vectors, complex numbers, functions and graph sketching
- communicate their arguments and strategies when solving problems
- construct proofs of results
- interpret mathematical information and ascertain the reasonableness of their solutions to problems.

This week: Sketching graphs:

- use and apply the notation $|x|$ for the absolute value for the real number x and the graph of $y = |x|$
- examine the relationship between the graph of $y = f(x)$ and the graphs of $y = \frac{1}{f(x)}$, $y = |f(x)|$ and $y = f(|x|)$
- sketch the graphs of simple rational functions where the numerator and denominator are polynomials of low degree.

Theoretical Components

Mathspace Lessons:

Absolute Value Functions:

- <https://goo.gl/tGFyqT>
- <https://goo.gl/T9DsVs>
- <https://goo.gl/dtz8hX>
-

Graphs of Rational Functions:

- <https://goo.gl/rNDccd>
- <https://goo.gl/AoFAA2>
-

Additional readings available on Google Classroom WKo6 folder.

Watch the following videos:

- Absolute Value Functions:

<https://goo.gl/1WgrJw>

- Graphs of Rational Functions:

<https://goo.gl/n3zBRk>

<https://goo.gl/Gw4qli>

<https://goo.gl/RuW2S7>

Practical Components

Check Google Classroom WK06 folder:

- WK06 Mathspace __ Domain and Range of Absolute Value Functions Questions
- WK06 Mathspace __ Solutions to Absolute Value Functions Questions
- WK06Mathspace __ Graphing Absolute Value Functions Questions
- WK06Mathspace __ Graphing Hyperbolas Questions
- WK06Mathspace __ Graphing Rational Functions Questions

Attempt at least 6 questions from each of the listed exercises.

Investigation

See the next page.

20 marks – see rubric.

Q/F/O
Quiz/Forum/Other

Mathspace Quiz in WKo6: to be completed by 18th March.

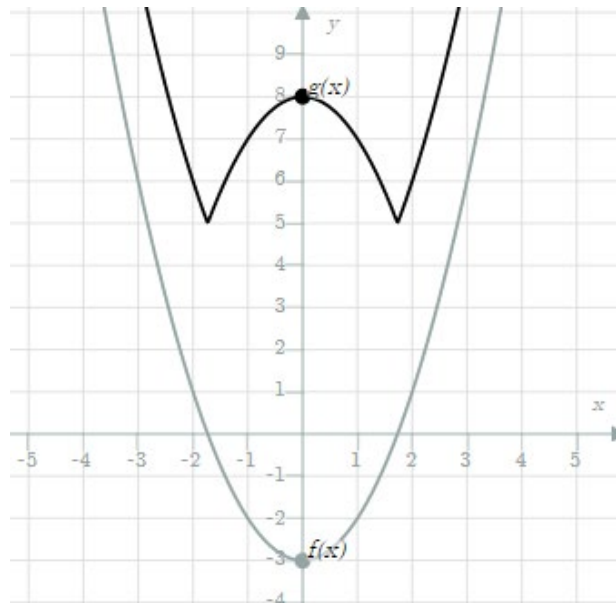
In-Class in WK07: Thursday, Line 8 (on Complex Roots and Graphing Rational Functions)

Investigation

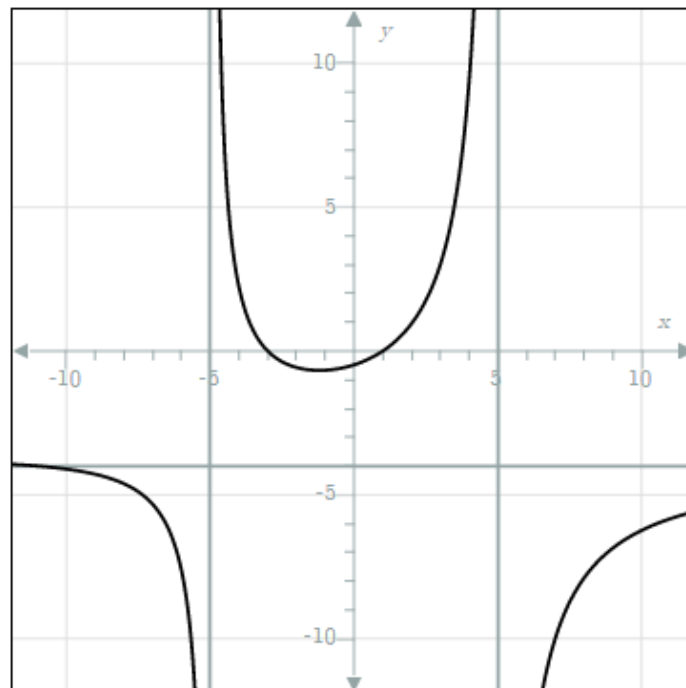
WK06:

Show working or justify with reasoning.

A: State the equations of $f(x)$ and $g(x)$:



B: Find a rational function $g(x)$ that has the graph shown:



WK07:

a) Sketch the graph of the following, locating any stationary points and asymptotes. State the range.

$$y = \frac{x^2+x+2}{x-1}$$

b) The concentration C of a drug in a patient's bloodstream t hours after injection is given by $C(t) = \frac{2t}{3+t^2}$. Use a graph to explain what happens to the concentration of the drug over time.