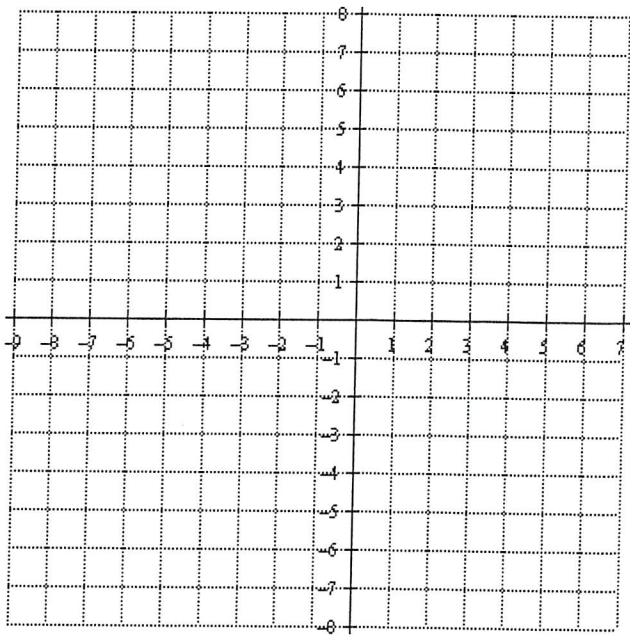
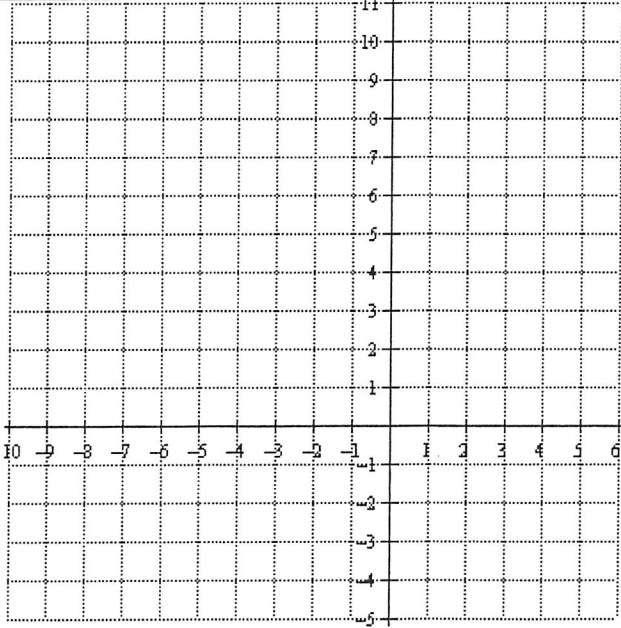


Day #38 Homework

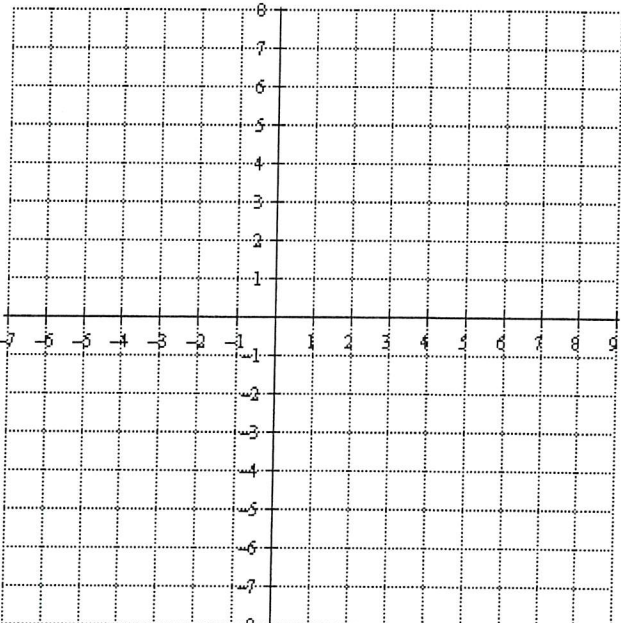
Use the function $f(x) = \frac{x^2 + x - 6}{x^2 - 4}$ to answer questions 1 – 7.

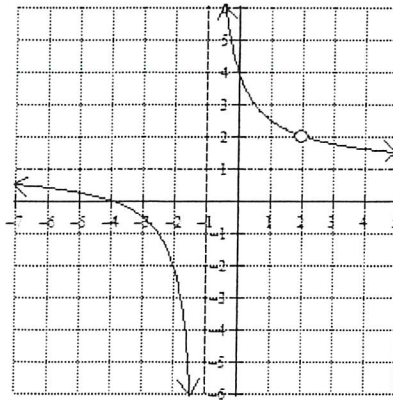
1.	What is the equation of the function written in completely factored form?	
2.	If any exist, identify the vertical asymptotes? Explain how you know that they are vertical asymptotes.	
3.	Does the function have any holes in the graph? Explain why or why not. What are the coordinates where the hole(s) exist(s)?	
4.	If any exist, identify the horizontal asymptotes. Explain how you know that they are horizontal asymptotes.	
5.	What is/are the zero(es) of the function? Show your work.	
6.	What are the domain and range of the function? Give your answer in interval notation.	
7.	Sketch a detailed graph of the function on the grid to the right. You will need to use a minimum of 8 points—4 points on each branch.	

Use the function $g(x) = \frac{3x^2 + 5x + 2}{x^2 + 4x + 3}$ to answer questions 8 – 14.

8.	What is the equation of the function written in completely factored form?	
9.	If any exist, identify the vertical asymptotes? Explain how you know that they are vertical asymptotes.	
10.	Does the function have any holes in the graph? Explain why or why not. What are the coordinates where the hole(s) exist(s)?	
11.	If any exist, identify the horizontal asymptotes. Explain how you know that they are horizontal asymptotes.	
12.	What is/are the zero(es) of the function? Show your work.	
13.	What are the domain and range of the function? Give your answer in interval notation.	
14.	Sketch a detailed graph of the function on the grid to the right. You will need to use a minimum of 8 points—4 points on each branch.	

Use the function $g(x) = \frac{2x-6}{x^2-4x+3}$ to answer questions 15 – 21.

15.	What is the equation of the function written in completely factored form?	
16.	If any exist, identify the vertical asymptotes? Explain how you know that they are vertical asymptotes.	
17.	Does the function have any holes in the graph? Explain why or why not. What are the coordinates where the hole(s) exist(s)?	
18.	If any exist, identify the horizontal asymptotes. Explain how you know that they are horizontal asymptotes.	
19.	What is/are the zero(es) of the function? Show your work.	
20.	What are the domain and range of the function? Give your answer in interval notation.	
21.	Sketch a detailed graph of the function on the grid to the right. You will need to use a minimum of 8 points—4 points on each branch.	



The graph of a rational function, $F(x)$, is pictured above. Answer the following questions.

<p>22. What can be said about the degree of the numerator of $F(x)$ compared to the degree of the denominator? Give a reason.</p>	<p>23. If a is the leading coefficient of the numerator and b is the leading coefficient of the denominator, what is the value of $\frac{a}{b}$? Give a reason.</p>
<p>24. What factor(s) is/are guaranteed to be in the denominator of $F(x)$? Give a reason for your answer.</p>	<p>25. What factor is guaranteed to be in the numerator of $F(x)$ that does not cancel out? Give a reason.</p>
<p>26. What factor is guaranteed to be in both the numerator and denominator of $F(x)$? Give a reason.</p>	<p>27. What factor is guaranteed to be in the denominator that does not cancel out? Give a reason.</p>
<p>28. In both factored and standard form, find an equation of $F(x)$. Give two graphical reasons why your standard form equation makes sense based on the graph.</p>	