Math 2312 – Pre-Calculus ***Exam* 1** ***Review***

*Professor*: Fred Khoury

1. Find the domain of:
2. 
3. 
4. For the function *f* given by , find the difference quotient 
5. Let 
6. Sketch the graph of *f*.
7. Find the domain and range of *f*.
8. Find the intervals on which *f* is increasing or is decreasing
9. Explain how the graph  compares to the graph of 
10. Sketch the graph 
11. Let 
12. Find  and the domain of 
13. Find  and the domain of 
14. Let 
15. Find  and the domain of 
16. Find  and the domain of 
17. Let 
18. Find  and the domain of 
19. Find  and the domain of 
20. Let . Find all values of *x* such that and all *x* such that , and then sketch the graph of .
21. Find the quotient and remainder if  is divided by 
22. Find the zeros of , and state the multiplicity of each zero.
23. Find all solutions of the equation: 
24. Find the vertical asymptotes, horizontal asymptotes, oblique asymptotes, intercepts, and holes (if any) of:
25. 
26. 
27. 
28. Find an equation of a rational function  that satisfies the given conditions



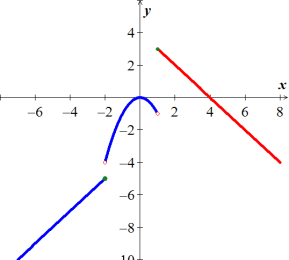
1. Let 
2. Is one-to-one function
3. Find , if it exists.
4. Find the domain and range of  and 
5. Sketch  and 
6. Let 
7. Is  one-to-one function
8. Find , if it exists.
9. Find the domain and range of  and 
10. Sketch  and 
11. Let , determine the asymptote, domain, range, increasing and decreasing, and sketch 
12. Let , determine the asymptote, domain, range, increasing and decreasing, and sketch 
13. Solve the equations:
14. 
15. 
16. 
17. 
18. 
19. 
20. 
21. 
22. 
23. 
24. Solve the equation for ***x*** in terms of ***y***.
25. 
26. 
27. Express the following in terms of sums and differences of logarithms 

***Solution***

1. 
2. 

|  |  |  |
| --- | --- | --- |
|  | Domain:  Range: | The function is increasing on |

1. Reflected across *x*-axis, stretched vertically by 2 units, stretched horizontally by  units, shifted right 3 units, and up 5 units.



1. 



1. 



1. 

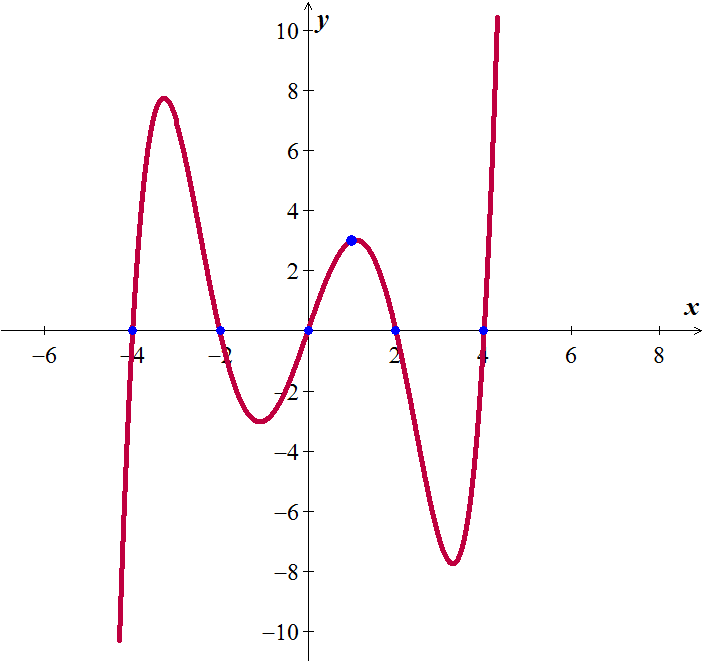


1. 

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| −4 −2 0 2 4 | | | | | |
| − | + | − | + | − | + |





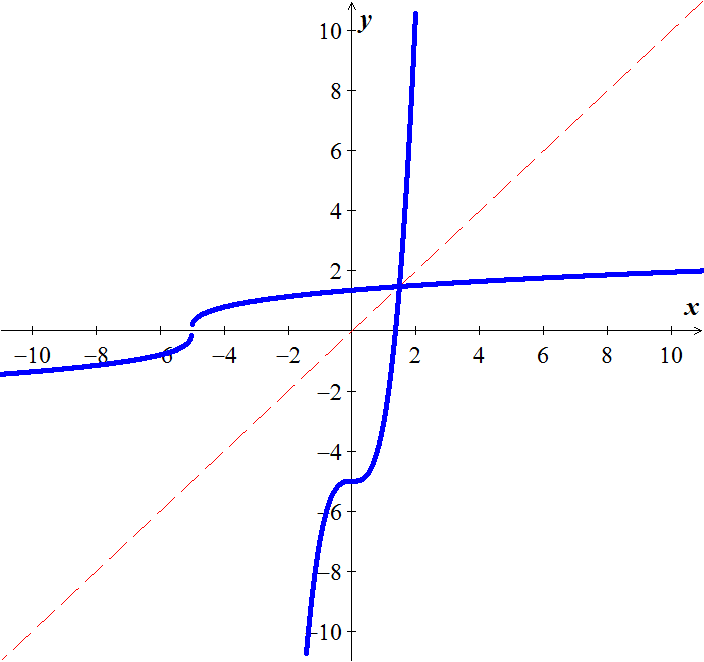


1. 
2. ; 
3. 
4. *a*) 

*b*) 

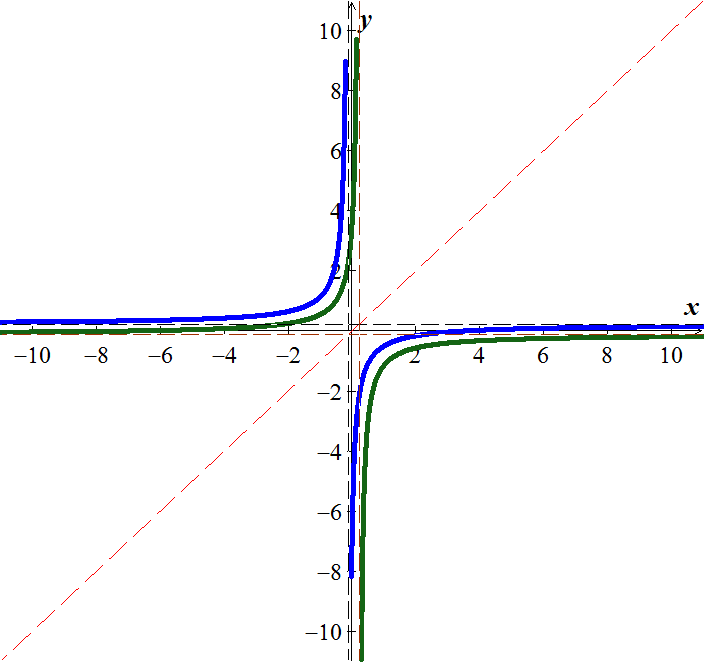
*c*) 

1. 
2. *a*) Yes *b*)  *c*) Domain & Range of  and :



1. *a*) Yes *b*)  *c*) Domain of  = Range of : −

Range of  = Domain of : −



|  |  |
| --- | --- |
| ***Asymptote***: *y* = 0  ***Domain***:  ***Range***:  ***Incr***.:  ***Decr***.: |  |

|  |  |
| --- | --- |
| ***Asymptote***: *x* = −3  ***Domain***:  ***Range***:  ***Incr***.:  ***Decr***.: None. |  |

1. 



















1.  
2. ****