MHF4U1 RATIONAL FUNCTIONS PRACTICE TEST

**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. What is the *x*-intercept of the function ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | *x* = 1 and *x* = 4 | c. | *x* = –4 |
| b. | *x* = 1 | d. | *x* = 4 |

\_\_\_\_ 2. What is the domain of the function ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 3. What is the oblique asymptote for ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 4. Which of the following functions does not have a vertical asymptote?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 5. Which of the following functions does not have a horizontal asymptote?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 6. What are the zeros of ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 7. Which of the following statements is false for the function  where both *g* and *h* are polynomial functions?

|  |  |
| --- | --- |
| a. | It is possible to have both a vertical asymptote and a horizontal asymptote. |
| b. | It is possible to have both an oblique asymptote and a horizontal asymptote. |
| c. | It is possible to have both a vertical asymptote and an oblique asymptote. |
| d. | It is impossible to have an oblique asymptote, a horizontal asymptote, and a vertical asymptote. |

\_\_\_\_ 8. What is the horizontal asymptote of ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 9. What are the vertical asymptotes of ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | and | c. | and |
| b. | and | d. |  |

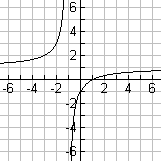
\_\_\_\_ 10. Which of the following functions has an oblique asymptote?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 11. Which of the following functions has a vertical asymptote at  and a horizontal asymptote of ?

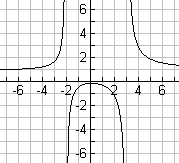
|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 12. Which equation represents the following graph?



|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 13. What is the domain of the following function?



|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 14. Describe the characteristics of the function ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the vertical asymptote is *x* = -2 | c. | the oblique asymptote is *y* = *x* - 2 |
| b. | the horizontal asymptote is *y* = 0 | d. | there is a point discontinuity |

\_\_\_\_ 15. For which function below does  when ?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 16. Which function below has no horizontal asymptote?

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

17. Solve 

18. a) Solve using critical points 

b) Sketch the two functions and shade the area that satisfies the inequality.

19. Sketch , showing all asymptotes and intercepts on your graph.

20. a) For the function determine the asymptotes, domain, intercepts and

behavior as *f(x)* approaches the vertical asymptote

b) Use the information to sketch the graph of the function.

Text book questions:

Pg 309 #9

Pg 262 #1 – make sure you can explain your answer.

Answers:

1. A 2) B 3) B 4) C 5) A 6) C 7) B 8) D 9) A 10) B

11) D 12) C 13) D 14) B 15) B 16) C

17) x = 0 or 6/7

18)



19)



20) b.

