Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Rational Functions 9-6-17 Hour 1 2 3 4 5 6 7

Rewrite each of the following in completely factored and simplified form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |

General Rules for Horizontal Asymptotes, BE SURE TO COMPLETELY REDUCE RATIONAL EXPRESSIONS FIRST!

|  |  |  |
| --- | --- | --- |
| If  Then  Horizontal Asymptote | If  Then  Horizontal Asymptote | If  Then  Horizontal Asymptote |
| If  Then  Horizontal Asymptote | If  Then  Horizontal Asymptote |

Directions: Determine the horizontal asymptote for each of the following IF POSSIBLE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Horizontal Asymptote | Horizontal Asymptote | Horizontal Asymptote | Horizontal Asymptote | Horizontal Asymptote |

Directions: Determine the y intercept for each of the following IF POSSIBLE. Write as a point (0, y intercept)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Y Intercept | Y Intercept | Y Intercept | Y Intercept | Y Intercept |

Directions: Determine the x intercept(s) for each of the following IF POSSIBLE. Write as a point (x intercept, 0)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| X Intercept(s) | X Intercept(s) | X Intercept(s) | X Intercept(s) | X Intercept(s) |

Directions: Determine the Vertical Asymptotes for each of the following IF POSSIBLE. Write as a vertical line x = number

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Vertical Asymptotes | Vertical Asymptotes | Vertical Asymptotes | Vertical Asymptotes | Vertical Asymptotes |

Directions: Determine the HOLES for each of the following IF POSSIBLE. HINT: SIMPLIFY RATIONAL FUNCTIONS FIRST!

Write as a point (excluded x, new y at excluded x)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| HOLE | HOLE | HOLE | HOLE | HOLE |

1. Why does a rational function have a HOLE?
2. If a rational function has a HOLE, then how do you find it?
3. Why would a rational function NOT have a horizontal asymptote?
4. Why would a rational function NOT have an x intercept?
5. Why would a rational function NOT have a vertical asymptote?