Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Rational Functions Study Guide (Algebra Boot Camp) Honors Calculus Perry

**Part I: For each rational function, find all the holes, intercepts, and asymptotes.
Find also the domain, and do a sign analysis. Use each to sketch the graph of the function.**

**SHOW YOUR WORK ON A SEPARATE SHEET OF PAPER.**

|  |  |
| --- | --- |
| **1.** $f\left(x\right)= \frac{x+3}{-3x+12}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

|  |  |
| --- | --- |
| **2.** $f\left(x\right)= \frac{x^{2} + x - 12}{x^{2} +5x+4}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

|  |  |
| --- | --- |
| **3.** $f\left(x\right)= \frac{-x^{2} + x }{x^{2} + x - 6}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

|  |  |
| --- | --- |
| **4.** $f\left(x\right)= \frac{x^{3} - 4x }{3x^{2} - 3x}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

|  |  |
| --- | --- |
| **5.** $f\left(x\right)= \frac{x+ 2 }{x^{2} + 4}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

|  |  |
| --- | --- |
| **6.** $f\left(x\right)= \frac{4x^{2} }{x^{2} + 4}$ |  |
| **Holes:** |
| **Intercepts:** |
| **Asymptotes:** |
| **Domain:** |
| **Sign Analysis:** |

**Part II: For the graph of each rational function, use what you know about holes, intercepts,
asymptotes, and multiplicity to write a possible equation for the graph. Without using a graphing
calculator, explain how you know that the equation is accurate.**

|  |  |  |
| --- | --- | --- |
| **1.**  | **F(x) =** **Explain:** |  |

|  |  |
| --- | --- |
| **2.**  | **F(x) =** **Explain:** |