2B.3 Homework **Graphing Rational Functions** **Name** _____

Find the domain, range, vertical, horizontal, & slant asymptotes, x & y intercepts, intervals of increasing & decreasing, and holes for the following functions. When determining intervals of increasing and decreasing. You will need to put rel max, rel min, min or max since you cannot determine the max's and min's. Graph.

1. $f(x) = \dfrac{x^2 + 10x + 21}{x + 3}$

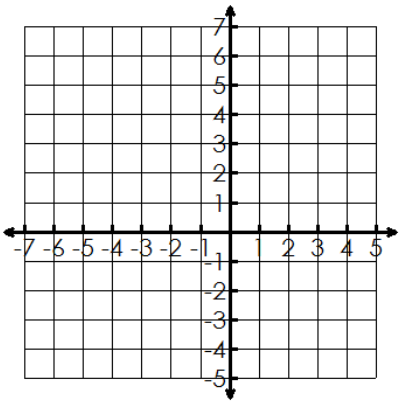
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



2. $f(x) = \dfrac{x - 1}{x^2 + 3x - 4}$

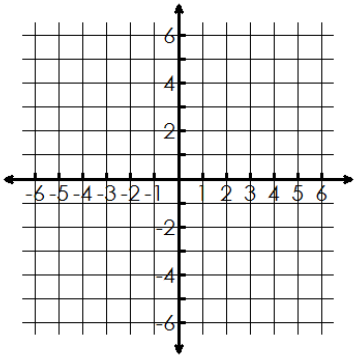
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



3. $f(x) = \dfrac{x^2 + 4x - 5}{x + 2}$

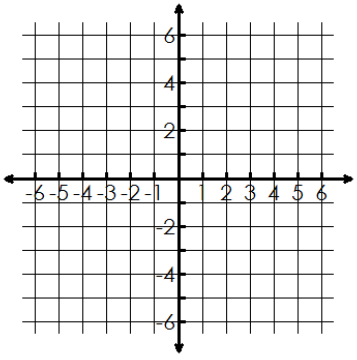
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



4. $f(x) = \dfrac{3x^2 + 5x - 12}{x^2 + x - 6}$

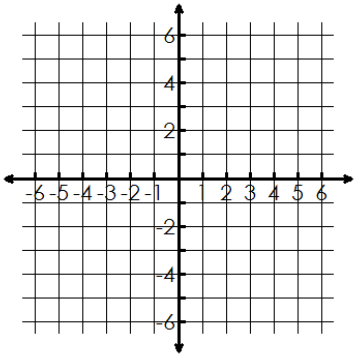
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



5. $f(x) = \dfrac{2x^2 - 18}{x^2 - 4}$

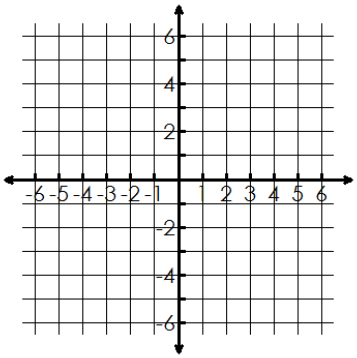
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



6. $f(x) = \dfrac{x^2 - x - 2}{x - 1}$

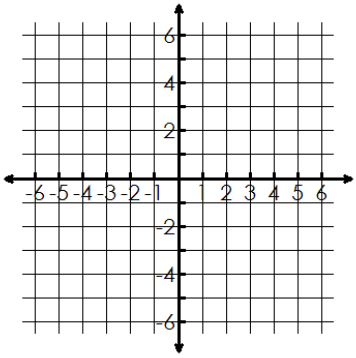
Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____



7. Determine all asymptotes & holes for $f(x) = \dfrac{2x^2 - 5x + 5}{x - 2}$

8. Determine all asymptotes & holes for $f(x) = \dfrac{6 - 2x}{3 - x}$

9. Write a rational equation with vertical asymptotes of $x = 1, x = \dfrac{-1}{3}$ and horizontal asymptote of $y = 5.$

10. Write a rational equation with vertical asymptote of $x = 4$, a horizontal asymptote of $y = 3$ and a zero at $x = -2.$

11. Find all information for the graph.

Domain: _____ Range: _____

VA: _____ HA: _____

x-int: _____ y-int: _____

inc: _____ dec:_____

holes: _____ slant :_____