

Name Key

Date _____

Period _____

Graphing Rational Functions Worksheet 2

Find the VA and HA of the following:

1. $\frac{x^2+4x-5}{x^2+9x+20} = \frac{(x+5)(x-1)}{(x+5)(x+4)}$ 2. $\frac{x^2-9}{x+3} = \frac{(x+3)(x-3)}{(x+3)}$

VA $X = -4 \rightarrow \frac{x-1}{x+4} \rightarrow x+4=0 \rightarrow x=-4$ VA none $\rightarrow 1$

HA $Y = 1$ same $\frac{1}{1}$ HA none large small

*nothing can be set equal to zero

3. $\frac{2x^2+9x-18}{x+6} = \frac{(2x-3)(x+6)}{(x+6)}$
 VA $X = 3/2$
 HA $Y = 0$
 small large
 $2x-3=0$
 $2x=3$
 $x=3/2$

Graph each equation and fill in all the blanks.

4. $y = \frac{3}{x+2}$ *can't factor

Domain $(-\infty, -2) \cup (-2, \infty)$

VA $X = -2$ $x+2=0$
 $x=-2$

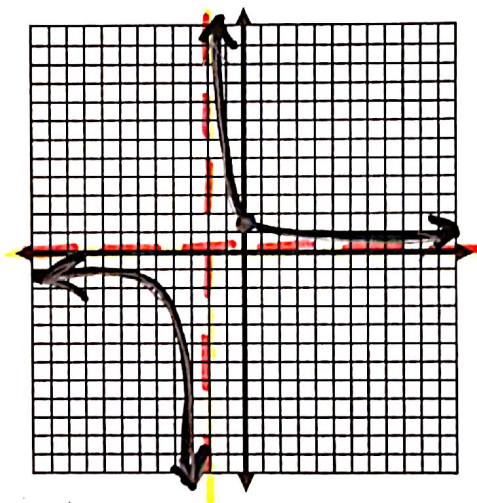
Holes none

x-int none

y-int $(0, 3/2)$

HA $Y = 0$ small large

Continuous/Discontinuous Discontinuous



5. $y = \frac{x^2-9}{x-3} = \frac{(x+3)(x-3)}{x-3} = x+3$

Domain $(-\infty, 3) \cup (3, \infty)$

VA none

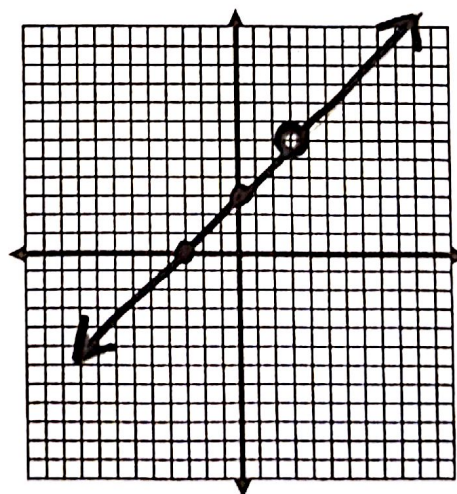
Holes $(3, 6)$

x-int $(-3, 0)$

y-int $(0, 3)$

HA none high low

Continuous/Discontinuous Discontinuous



6. $y = \frac{x^2 - 2x - 3}{x - 2}$

Domain $(-\infty, 2) \cup (2, \infty)$ $\frac{(x-3)(x+1)}{x-2}$

VA $x = 2$ $x - 2 = 0$
 $x = 2$

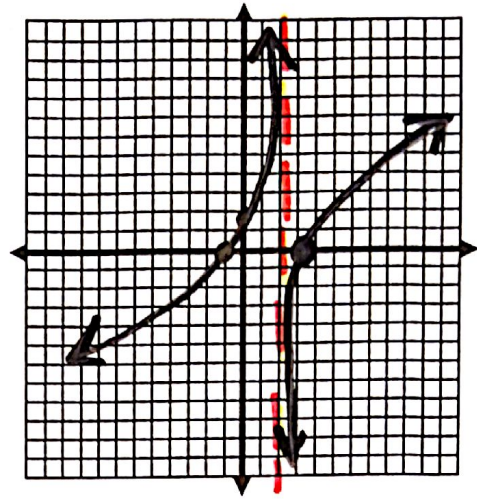
Holes none

x-int $(3, 0)$ & $(-1, 0)$

y-int $(0, 3/2)$

HA none $\frac{\text{high}}{\text{small}}$

Continuous/Discontinuous Discontinuous



* $y = \frac{x+1}{(x-3)^2}$ ← will make a quadratic so higher degree

Domain $(-\infty, 3) \cup (3, \infty)$ $\frac{x+1}{(x-3)(x-3)}$

VA $x = 3$ $x - 3 = 0$
 $x = 3$

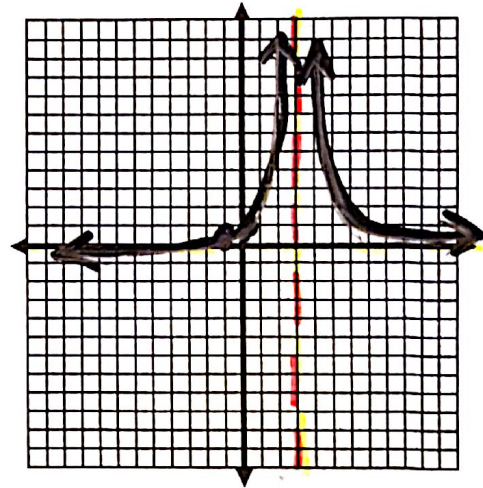
Holes none

x-int $(-1, 0)$

y-int $(0, 1/9)$

HA $y = 0$ $\frac{\text{small}}{\text{high}}$

Continuous/Discontinuous Discontinuous



8. $y = \frac{x-4}{-4x-16}$

Domain _____

VA _____

Holes _____

x-int _____

y-int _____

HA _____

Continuous/Discontinuous _____

* same as in-class example

