

2.6 Notes

Monday, September 26, 2016 8:15 AM

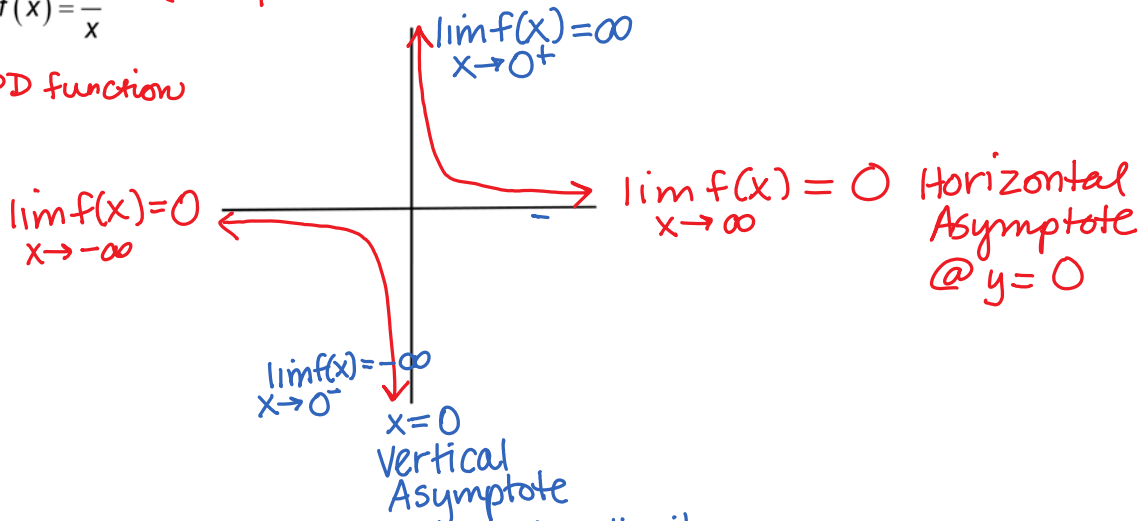
Precalculus

Section 2-6 Rational Functions

Name _____

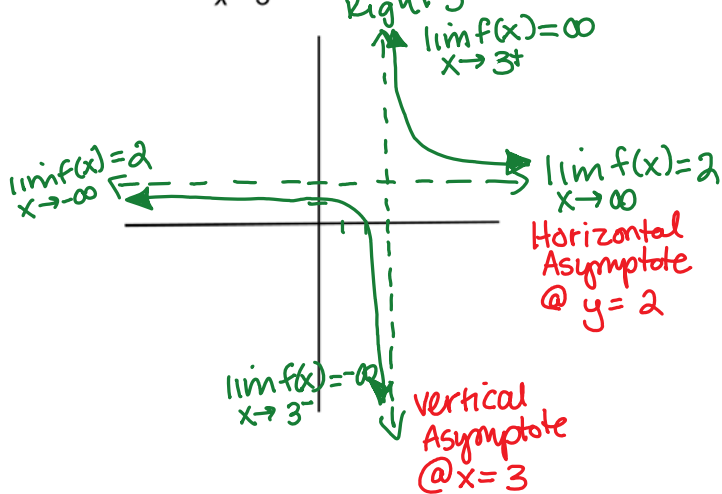
1. $f(x) = \frac{1}{x}$ (Reciprocal Function)

ODD function



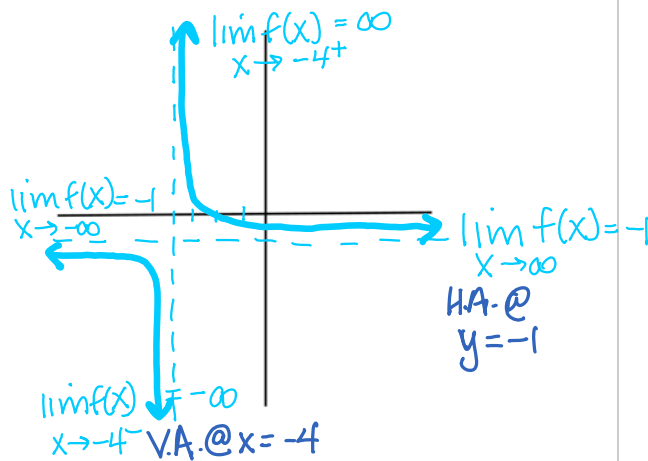
2. $f(x) = \frac{1}{x-3} + 2$

Up 2
Right 3



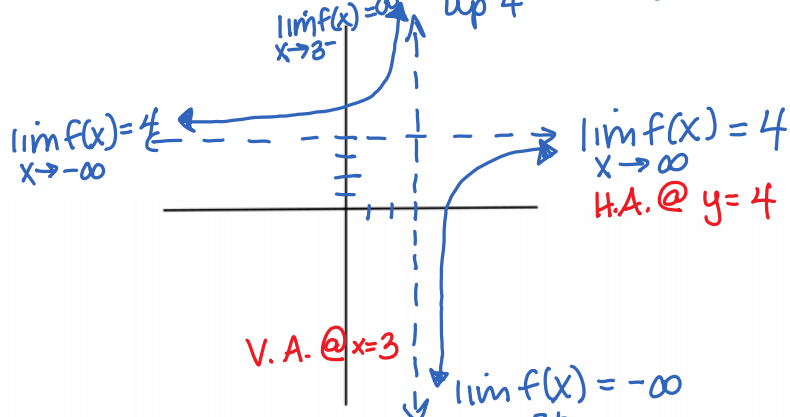
3. $f(x) = \frac{1}{x+4} - 1$

down 1
Left 4



4. $f(x) = -\frac{1}{x-3} + 4$

vert. Refl.
up 4
Right 3



V. A. @ $x=3$ | $\lim_{x \rightarrow 3^+} f(x) = -\infty$

Vertical Asymptotes : when denominator = 0, non-removable

$$5. f(x) = \frac{x+3}{x-2}$$

$x=2$ vertical asymptote

$$6. f(x) = \frac{x^2}{x^2-9} = \frac{x^2}{(x+3)(x-3)}$$

$x=-3, x=3$
vertical asymptotes

$$7. f(x) = \frac{2x+1}{x^2-3x-10} = \frac{2x+1}{(x+2)(x-5)}$$

$x=-2, x=5$
vertical asymptotes

$$8. f(x) = \frac{x-2}{x^2+x-6} = \frac{\cancel{x-2}}{(\cancel{x-2})(x+3)} = \frac{1}{x+3}$$

$x=-3$ vertical asymptote
 $x=2$ Removable discontinuity

Horizontal Asymptotes : what the graph approaches when x gets really big or really small
 $x \rightarrow \infty$ $x \rightarrow -\infty$

① $\frac{\text{same deg}}{\text{same deg}}$ HA: $y = \frac{\text{l.c.}}{\text{l.c.}}$ ② $\frac{\text{small deg}}{\text{big deg}}$ HA: $y=0$ ③ $\frac{\text{big deg}}{\text{small deg}}$ No HA.

$$9. f(x) = \frac{x+3}{x-2}$$

H.A. $y=1$

$$10. f(x) = \frac{x^2}{2x^2-9}$$

H.A. $y = \frac{1}{2}$

$$11. f(x) = \frac{2x+1}{x^2-3x-10}$$

H.A. $y=0$

$$12. f(x) = \frac{x^2+x-6}{x-2}$$

No H.A.