

Precalc
Graphing Rational Functions Part 3 - Slant Asymptotes

$$f(x) = \frac{x^2 - 4}{x}$$

x-intercepts:	$(2, 0)$ $(-2, 0)$
Vertical Asymptotes:	$x = 0$
Slant Asymptote:	$y = x$
Holes:	None
y-Intercept(s):	None
Domain:	$(-\infty, 0) \cup (0, \infty)$
Range:	$(-\infty, \infty)$

x-int
 $x^2 - 4 = 0$
 $x = 2$ $x = -2$

slant asymptote
 $\frac{x^2}{x} - \frac{4}{x} \rightarrow x - \frac{4}{x}$
 $\rightarrow y = x$

$$f(x) = \frac{x^2 + 4}{x}$$

x-intercepts:	None
Vertical Asymptotes:	x=1
Slant Asymptote:	y=x
Holes:	None
y-Intercept(s):	None
Domain:	(-∞, 0) ∪ (0, ∞)
Range	

x-int
 $x^2 + 4 = 0$
 $x^2 = -4$
 No Sol so
 no x-ints.

slant asymptote
 $\frac{x^2}{x} + \frac{4}{x} \rightarrow x + \frac{4}{x}$
 $\hookrightarrow y=x$

$f(1) = 5$
 $f(2) = 4$

$f(-1) = -5$
 $f(-2) = -4$

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

x-intercepts:	None
Vertical Asymptotes:	$x = 1$
Slant Asymptote:	$y = x$
Holes:	None
y-Intercept(s):	$(0, -1)$
Domain:	$(-\infty, 1) \cup (1, \infty)$
Range	

x-ints \rightarrow can't factor, use Q.F.

$$\frac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(1)}}{2(1)} \rightarrow$$
negative so
no sol and
no x-int.

slant asymptote

$$\begin{array}{r|rr} 1 & -1 & 1 \\ & 1 & 0 \\ \hline & 1 & 0 & 1 \end{array} \rightarrow x + \frac{1}{x-1} \rightarrow y = x$$





