A) Find the intercepts **B) Find the asymptotes(HA or slant/Vertical)**
C) Find the domain **D) Use limits to describe the end behavior.**
E) Determine where the function is continuous

$$f(x)=\frac{x^2-x-2}{x-3}$$

x-ints top = 0

$x^2-x-2=0$

$(x-2)(x+1)=0$

$x=2 \quad x=-1$

y-int $(x=0)$

$y=\frac{-2}{-3}=\frac{2}{3}$

slant: $y=x+2$

3 | 1 −1 −2
3 6
1 2 4

$x+2$

VA: $x-3=0$

$x=3$

Domain: $x\neq 3$

Continuous Everywhere but at $x=3$

$\lim_{x\to-\infty} f(x)$

$\lim_{x\to\infty} f(x)$

end behavior model

$g(x)=\frac{x^2}{x}=x$

F) Use limits to describe the behavior at the vertical asymptote(s)

G) Sketch a graph

$\lim_{x \to 3^-} f(x) = -\infty$

$f(x) = \frac{x^2 - x - 2}{x - 3}$ $\quad f(2.5) = \frac{2.5^2 - 2.5 - 2}{2.5 - 3} < 0$

$\lim_{x \to 3^+} f(x) = \infty$

$f(4) = \frac{4^2 - 4 - 2}{4 - 3} > 0$