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

a. Domain = $\{x : x \neq 1\}$

b. Intercepts (0,0), (-1,0)

c. Asymptotes

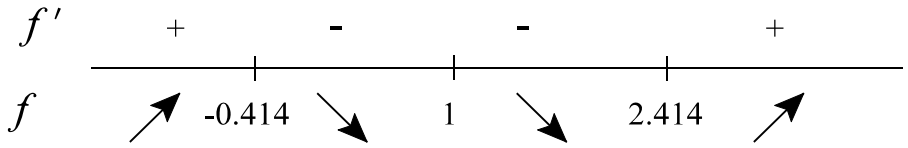
1. Horizontal: None since $\lim_{x\to\infty}\frac{x^2+x}{x-1}=\infty$, $\lim_{x\to-\infty}\frac{x^2+x}{x-1}=-\infty$

2. Vertical: $x=1$ since $\lim_{x\to1^+}\frac{x^2+x}{x-1}=+\infty$, $\lim_{x\to1^-}\frac{x^2+x}{x-1}=-\infty$

d. $f'(x)=\frac{x^2-2x-1}{(x-1)^2} \Rightarrow$

C.N. $x=1-\sqrt{2}\approx-0.414$, $x=1$, $x=1+\sqrt{2}\approx 2.414$

e.



Increasing on $(-\infty,1-\sqrt{2})\cup(1+\sqrt{2},\infty)$

Decreasing on $(1-\sqrt{2},1)\cup(1,1+\sqrt{2})$

f. *P* (-0.414,0.1716) is a relative maximum point on the graph
P (2.414,5.8284) is a relative minimum point of the graph

g. $f''(x)=\frac{4}{(x-1)^3} \Rightarrow$ 2^{nd} C.N. $x=1$

h. f'' | - | + |

f | $\cap$ | 1 | $\cup$ |

Concave up on $(1,\infty)$

Concave down on $(-\infty,1)$

i. Inflection points: None because $x=1$ is not in the domain

j. Values

x	-6	-5	-4	-3	-2	-1	0	2	3	4	5	6
y	-4.2857	-3.333	-2.4	-1.5	-0.6666	0	0	6	6	6.6666	7.5	8.4

k. Graph