$$y=\frac{3x-x^2}{5x+1}$$

$D=\{\forall x\in\mathbb{R}:\ x\neq -1/5\}$

$D=\,]-\infty;-1/5[\,\cup\,]-1/5;+\infty[$

		$-1/5$		0		3	
$3x-x^2$	$-$		$-$	0	$+$	0	$-$
$5x+1$	$-$	0	$+$		$+$		$+$
y	$+$	$\nexists$	$-$	0	$+$	0	$-$

intersezioni con gli assi

$(0;0)\ (3;0)$

asintoti

A.V. $x=-1/5$

asintoto obliquo

$$m=\lim_{x\to\infty}\frac{3x-x^2}{5x^2+x}=\lim_{x\to\infty}\frac{\frac{3}{x}-1}{5+\frac{1}{x}}=-\frac{1}{5}$$

$$q=\lim_{x\to\infty}\left(\frac{3x-x^2}{5x+1}+\frac{1}{5}x\right)=$$

$$=\lim_{x\to\infty}\frac{15x-\cancel{5x^2}+\cancel{5x^2}+x}{5(5x+1)}=\lim_{x\to\infty}\frac{16x}{25x+5}=\lim_{x\to\infty}\frac{16}{25+\frac{5}{x}}=$$

$q=16/25$

AS. OBL. $=y=-\frac{1}{5}x+\frac{16}{25}$

Studio della derivata:

$$y'=\frac{(3-2x)(5x+1)-5(3x-x^2)}{(5x+1)^2}\Rightarrow y'=\frac{\cancel{15x}+3-10x^2-2x-\cancel{15x}+5x^2}{(5x+1)^2}$$

$$y'=\frac{-5x^2-2x+3}{(5x+1)^2}$$

Scompongo $-5x^2-2x+3$

$-5x^2-5x+3x+3=-5x(x+1)+3(x+1)$

$=(x+1)(-5x+3)$

$$y'=\frac{(x+1)(-5x+3)}{(5x+1)^2}$$

		-1		$-1/5$		$3/5$	
$x+1$	$-$	0	$+$		$+$		$+$
$-5x+3$	$+$		$+$		$+$	0	$-$
$(5x+1)^2$	$+$		$+$	0	$+$		$+$
y'	$-$		$+$		$+$		$-$
y	$\searrow$	min	$\nearrow$	A.V.	$\nearrow$	MAX	$\searrow$

$f(-1)=1$

$f\left(\frac{3}{5}\right)=\frac{\frac{9}{5}-\frac{9}{25}}{4}=\frac{36}{25}\cdot\frac{1}{4}=$

$=9/25$

min $(-1;1)$ MAX $(3/5;9/25)$