Question

a) Function $f(x)=\frac{(3x-2)}{(3x+1)}$. Domain of the function is: $x\in\left(-\infty,-\frac{1}{3}\right)\cup\left(-\frac{1}{3},\infty\right)$.

$$f'(x)=\left(\frac{3x-2}{3x+1}\right)'=\frac{3\cdot(3x+1)-3\cdot(3x-2)}{(3x+1)^2}=\frac{9x+3-9x+6}{(3x+1)^2}=\frac{9}{(3x+1)^2}$$

$$f''(x)=\left(\frac{9}{(3x+1)^2}\right)'=\frac{-2\cdot3\cdot9\cdot(3x+1)}{(3x+1)^4}=-\frac{54}{(3x+1)^3}$$

There is one candidate in inflection point: $x=-\frac{1}{3}$. But this point doesn't include in domain of the function. So, there is no any inflection points.

b) Function increasing when:

$$f'(x)=\frac{9}{(3x+1)^2}>0\Rightarrow x\in\left(-\infty,-\frac{1}{3}\right)\cup\left(-\frac{1}{3},\infty\right).$$

Function decreasing when:

$$f'(x)=\frac{9}{(3x+1)^2}<0\Rightarrow x\in\varnothing.$$

c) Function concave up when:

$$f''(x)=-\frac{54}{(3x+1)^3}<0\Rightarrow\frac{54}{(3x+1)^3}>0\Rightarrow x\in\left(-\frac{1}{3},\infty\right).$$

Function concave down when:

$$f''(x)=-\frac{54}{(3x+1)^3}>0\Rightarrow\frac{54}{(3x+1)^3}<0\Rightarrow x\in\left(-\infty,-\frac{1}{3}\right).$$