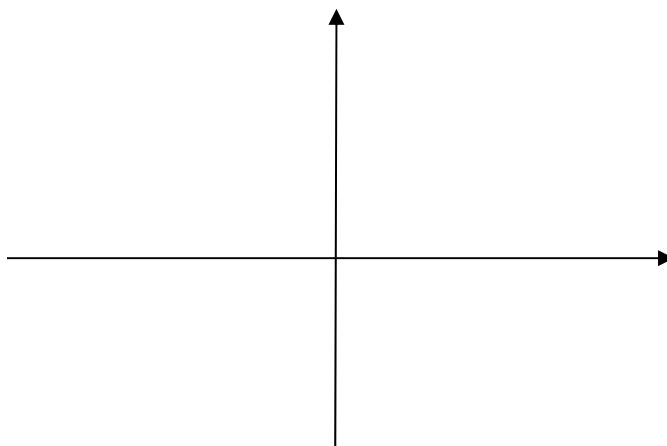


SHOW ALL YOUR WORK. NO CREDITS FOR ANSWERS NOT SUPPORTED BY WORK.

(1) (20 Points) Consider the function $f(x) = \frac{2x-1}{x^2}$

1. Find all asymptotes of $f(x)$.
2. Find the critical numbers.
3. Find increasing and decreasing intervals
4. Find local extrema if any exists.
5. Find inflection points if any exist.
6. Concavity intervals.
7. Sketch the graph and clearly indicate the features above.



(2) (8 points) Find the limit if it exists

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\ln(\sin x)}{(\pi - 2x)^2}$$

(3) (12 points) Two sides of a triangle are to lie on the coordinate axes and the third side is to pass through the point (2,5). Find the smallest area of such a triangle.