1. The graph of the second derivative $f''$ of function $f$ is shown below

a) For what value(s) of $x$ does $f'$ have a local maximum or minimum?

b) For what value(s) of $x$ is the graph of $f$ concave up?

c) For what value(s) of $x$ is the graph of $f$ concave down?

d) Where are the points of inflection of the graph of $f$ located?

2. Evaluate the limit: $\lim_{x \to 0} \frac{\cos x}{x^2}$. 

3. Find the absolute maximum value and the absolute minimum value attained by $f(x) = \frac{1}{x(1-x)}$ in the interval $[2,3]$.

4. Find the absolute maximum value and the absolute minimum value attained by $f(x) = x^{1/2} + x^{3/2}$ in the interval $[0,4]$.

5. What do derivatives say about the graph of $f(x) = x^2 + \frac{16}{x}$?

6. What do derivatives say about the graph of $f(x) = xe^{-x}$.