1. Using the definition find the equation of the tangent line of the function $f(x) = \dfrac{1}{x^3}$ at the point on the graph of $f(x)$ with an x-coordinate of 1.

2. Evaluate the limit if it exists. If it does not exist, explain why: $\displaystyle \lim_{x \to -\infty} \dfrac{3x-9}{5x-\sqrt{x^2+2}}$

3. Determine the values of a and b such that the function is continuous at every x, where $f(x) = \begin{cases} x+1 & , \ 1 < x < 3 \\ x^2 + ax + b & , \ |x-2| \geq 1 \end{cases}$

1. Using the definition find the equation of the tangent line of the function $f(x) = \frac{x-1}{2x}$ at the point on the graph of $f(x)$ with an x-coordinate of 2.

2. Evaluate the limit if it exists. If it does not exist, explain why: $\lim\limits_{x \to -\frac{\pi}{2}} \dfrac{2x^2 - \pi x - \pi^2}{2x + \pi}$

3. Show that the two functions $f(x) = \ln x$ and $g(x) = e^{-x}$ intersect at a point whose x-coordinate lie in the interval $[1 , e]$.