



MATHEMATICS 201-103-RE

Differential Calculus

Martin Huard

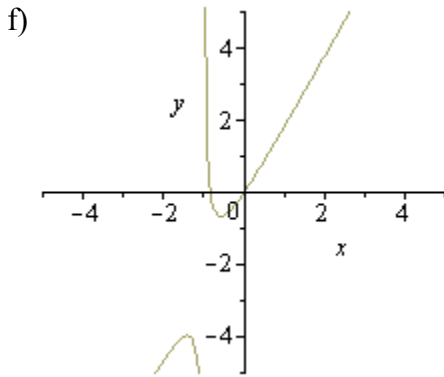
Fall 2011

Maple Exercises

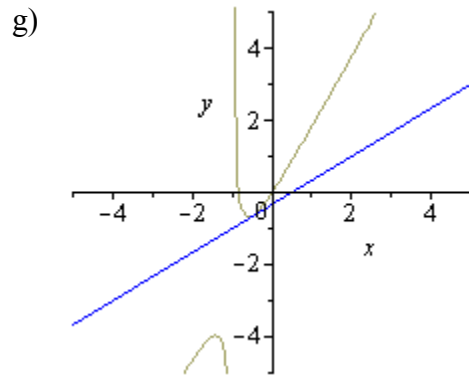
1. Consider the function $f(x) = 2x - \frac{x}{3x+3}$.
 - a) Define f as a function.
 - b) Evaluate $f\left(\frac{-1}{2}\right)$.
 - c) Factor $f(x)$.
 - d) Simplify $f\left(\frac{1}{t-1}\right)$.
 - e) Find the x -intercepts.
 - f) Sketch the graph of $f(x)$.
 - g) On the same graph, sketch $f(x)$ along with the line $y = \frac{2}{3}x - \frac{1}{3}$.
2. Find the following limits.
 - a) $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - 3x}$
 - b) $\lim_{x \rightarrow 0} \frac{\cos x - 1}{e^x - 1}$
 - c) $\lim_{x \rightarrow 2^-} \ln(2 - x)$
 - d) $\lim_{x \rightarrow -\infty} xe^{-x^2}$
3. Sketch the graph of the following curves.
 - a) $f(x) = \frac{x}{\sqrt{x^2 + 1}}$
 - b) $f(x) = x \ln x$
 - c) $(x^2 + y^2)^2 = 4x^2y$

ANSWERS

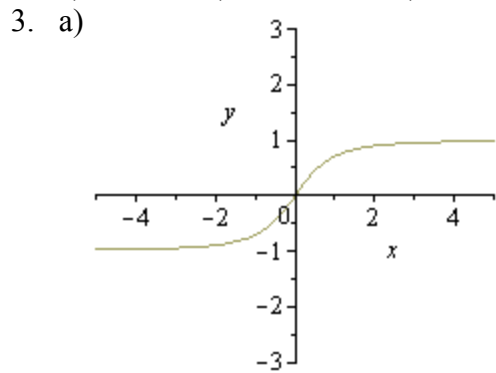
1. b) $\frac{-2}{3}$ c) $\frac{x(6x+5)}{3(x+1)}$ d) $\frac{5t+1}{3t(t-1)}$



e) $\frac{-5}{6}, 0$



2. a) 2 b) 0 c) $-\infty$



d) 0

