10.03.2014, Question 1: We have the system of differential equations ***x'=3x-2y*** and ***y'=4y²-7x***. If we know that ***x(0)=2*** and ***y(0)=1***, estimate the value of ***x*** and ***y*** *at t=0.1.*

(a) $x(0.1) = 4,\ y(0.1) = -10$

(b) $x(0.1) = 6,\ y(0.1) = -9$

(c) $x(0.1) = 2.4,\ y(0.1) = 0$

(d) $x(0.1) = 0.4,\ y(0.1) = -1$

(e) None of the above

10.03.2014, Question 2: TRUE or FALSE. The function $h(t)=4+3t$ is a linear combination of the functions $f(t)= 1+2t+t^2$ and $g(t)=2-t-t^2$.

(a) TRUE, and I am very confident.
(b) TRUE, but I am not very confident.
(c) FALSE, but I am not very confident.
(d) FALSE, and I am very confident.

10.03.2014, Question 3: Suppose $y_1(t)=exp(2t)$. For which of the functions will $\{y_1(t), y_2(t)\}$ be a linearly independent set?

(a) $y_2(t)=exp(-2t)$.
(b) $y_2(t)=exp(3t)$.
(c) $y_2(t)=1$.
(d) **All of the above**.
(e) **None of the above.**

10.03.2014, Question 4: Can the functions $y_1(t)=t$ and $y_2(t)=t^2$ be a linearly independent pair of solutions for an ODE of the form $y''+p(t)y'+q(t)y=0$ where $p(t)$ and $q(t)$ are continuous functions?

(a) YES, and I am very confident.
(b) YES, but I am not very confident.
(c) NO, but I am not very confident.
(d) NO, and I am very confident