

In this assignment you are asked to study the images that I posted on the class web-site on January 14, 2013. I posted four images. The first three images run animations on mouse-over the image. There are four tasks below. Do the first three tasks in the space provided on this page. The last task is to fill in the table on the back of this page.

**The first task:** Look at the second image posted. This image shows the line segment connecting Teal and Yellow. Provide a formula for all the points on this line segment. Please be clear and include all relevant information about the parameter. Explain your reasoning.

**The second task:** Write formulas for three colors which are  $1/3$ ,  $1/2$  and  $2/3$  between Teal and Yellow. Please provide the formulas as fractions, not decimal numbers. Explain the relationship to the first task.

**The third task:** There is a linear algebra way of defining **dark** and **light** of a certain color. If  $\mathbf{C}$  is a color given as a vector in  $\mathbb{R}^3$ , then the **dark** of  $\mathbf{C}$  is the color which is half-way between  $\mathbf{C}$  and Black. Similarly, the **light** of  $\mathbf{C}$  is the color which is half-way between  $\mathbf{C}$  and White. Your task here is to find a formula for the **dark** and **light** color of  $\mathbf{C}$  if  $\mathbf{C}$  is given below:

$$\mathbf{C} = \begin{bmatrix} r \\ g \\ b \end{bmatrix}$$

**The fourth task:** Look at the animation initiated on mouse-over the first image. That animation consists of 27 scenes. In each scene one more color is introduced. The first scene introduces Black. Your task here is to fill in the table on the back of this page. Each row of the table relates to the color introduced in the corresponding scene. For example, row 5 relates to the color Teal. So, you should fill in row 5 with the information about Teal. (The part of the task about the color names is not easy. I am assigning it here to see whether you will come up with some new names that I did not find. You should try to minimize the usage of **dark** and **light** in the table.)

Scene	The color coordinates corresponding to the vectors $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$ $\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$ $\begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$			Color name	Justification for the color name
1	0	0	0	Black	Wikipedia page about Black
2					
3					
4					
5					
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