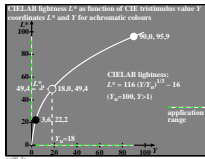
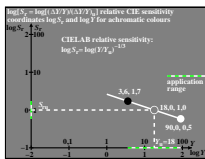
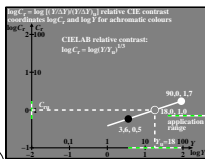
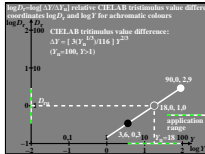
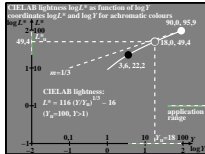
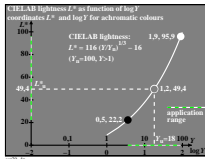


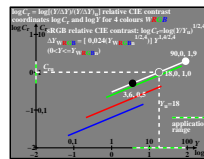
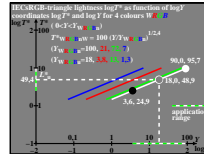
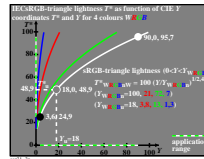
**LARIND lightness  $L^*$ , tristimulus value discrimination  $\Delta Y$ , contrast  $(Y/\Delta Y)$ , and CIE contrast sensitivity  $(Y/\Delta Y)$**   
**LARIND lightness for all colours,  $L^*_w=50$  for  $Y_w=18$**   
 $L^*_w = S_w \cdot Y_w^{1/3}$   
 $(Y_w=100, Y>1)$   
 For the grey discrimination we get:  
 $dL^*/dY = (116/3) \cdot (1/3) (Y/3)^{-2/3}$   
 and for  $dL^*=1$  (about 3 thresholds) we can write:  
 $dY = 3 (3/116) (Y/3)^{2/3}$   
 or  $\log(dY) = \log(3) (Y_w/116) + (2/3) \log(Y/Y_w)$   
 therefore in a log-log diagram the slope is (2/3),  
 for the CIE contrast sensitivity, and for  $dL^* = 1$  it is valid:  
 $Y/\Delta Y = (1/3) (116/Y_w) (Y/3)^{2/3}$   
 or  $\log(Y/\Delta Y) = \log(1/3) (116/Y_w) + (1/3) \log(Y/Y_w)$



**CIELAB lightness  $L^*$ , CIE tristimulus value discrimination  $\Delta Y$  and CIE contrast sensitivity  $(Y/\Delta Y)$**   
**CIELAB lightness for all colours  $L^*_w=100$ :**  
 $L^*_w = 116 (Y/3)^{1/3} - 16$   
 $(Y_w=100, Y>1)$   
 For the grey discrimination we get:  
 $dL^*/dY = (116/3) \cdot (1/3) (Y/3)^{-2/3}$   
 and for  $dL^*=1$  (about 3 thresholds) we can write:  
 $dY = 3 (3/116) (Y/3)^{2/3}$   
 or  $\log(dY) = \log(3) (Y_w/116) + (2/3) \log(Y/Y_w)$   
 therefore in a log-log diagram the slope is (2/3),  
 for the CIE contrast sensitivity, and for  $dL^* = 1$  it is valid:  
 $Y/\Delta Y = (1/3) (116/Y_w) (Y/3)^{2/3}$   
 or  $\log(Y/\Delta Y) = \log(1/3) (116/Y_w) + (1/3) \log(Y/Y_w)$



**sRGB-triangle lightness  $T^*$ , CIE tristimulus value discrimination  $\Delta Y$  and CIE contrast  $(Y/\Delta Y)$**  sRGB: see EC 1996-2-1  
**sRGB-triangle lightness for achromatic colours: W**  
 $T^*_w = S_w \cdot W_w^{1/2.4}$   
 $(W_w=100, W>1)$   
 For the grey discrimination we get:  
 $dT^*/dW = (1/2.4) (W/2.4)^{-1.424} = 0.42 (W/2.4)^{-0.58}$   
 and for  $dT^*=1$  (about 3 thresholds) we can write:  
 $dW = 2.4 (W/2.4)^{1.424}$   
 or  $\log(dW) = \log(2.4) + (1.424) \log(W/2.4)$   
 therefore in a log-log diagram the slope is 1.424,  
 for the CIE contrast sensitivity, and for  $dT^* = 1$  it is valid:  
 $W/\Delta W = (1/2.4) (2.4/W_w)^{1.424}$   
 or  $\log(W/\Delta W) = \log(1/2.4) (2.4/W_w)^{1.424} + 1/2.4 \log(W/Y_w)$



**IECSRGB-triangle lightness  $T^*$ , CIE tristimulus value discrimination  $\Delta Y$  and CIE contrast  $(Y/\Delta Y)$**  sRGB: see EC 1996-2-1  
**IECSRGB-triangle lightness for achromatic colours: RGB**  
 $T^*_w = S_w \cdot W_w^{1/2.4}$   
 $(W_w=220, W>1)$   
 For the discrimination we get:  
 $dT^*/dW = (1/2.4) (W/2.4)^{-1.424} = 0.42 (W/2.4)^{-0.58}$   
 and for  $dT^*=1$  (about 3 thresholds) we can write:  
 $dW = 2.4 (W/2.4)^{1.424}$   
 or  $\log(dW) = \log(2.4) + (1.424) \log(W/2.4)$   
 therefore in a log-log diagram the slope is 1.424,  
 for the CIE contrast sensitivity, and for  $dT^* = 1$  it is valid:  
 $W/\Delta W = (1/2.4) (2.4/W_w)^{1.424}$   
 or  $\log(W/\Delta W) = \log(1/2.4) (2.4/W_w)^{1.424} + 1/2.4 \log(W/Y_w)$

