

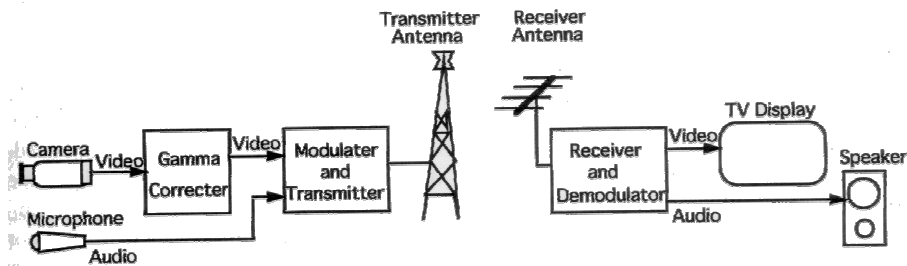
## Gamma Correction

Many TV cameras and all CRT-based displays have a nonlinear relationship between signal voltage and light intensity.  $B = c v^r + b$   $B$ : light intensity  $c$ : gain factor

$b$ : cutoff (camera) or black level (CRT) light intensity

$r$ :  $1 \sim 3.0$

To avoid gamma correction circuitry inside millions of TV receivers, gamma correction is done prior to transmission. Ex. Assuming the gamma of camera to be 1 and that of the display to be 2.2, then the camera voltage is raised to a power of  $1/2.2 = 0.45$ .



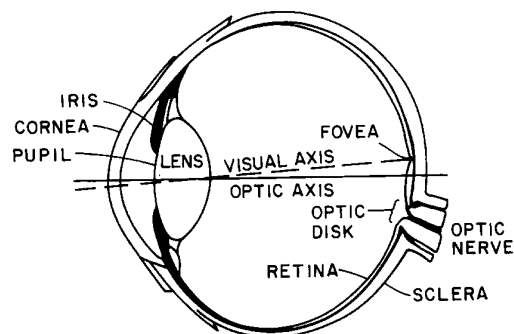
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## Human visual system

- The *retina* consists of receptors sensitive to light called photoreceptors connected by nerve cells. *Photoreceptors: Rods and Cones*, rods are responsible for low light vision, while cones are responsible for details and color under normal conditions, as in daylight.



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