Power Law (Gamma) Transform
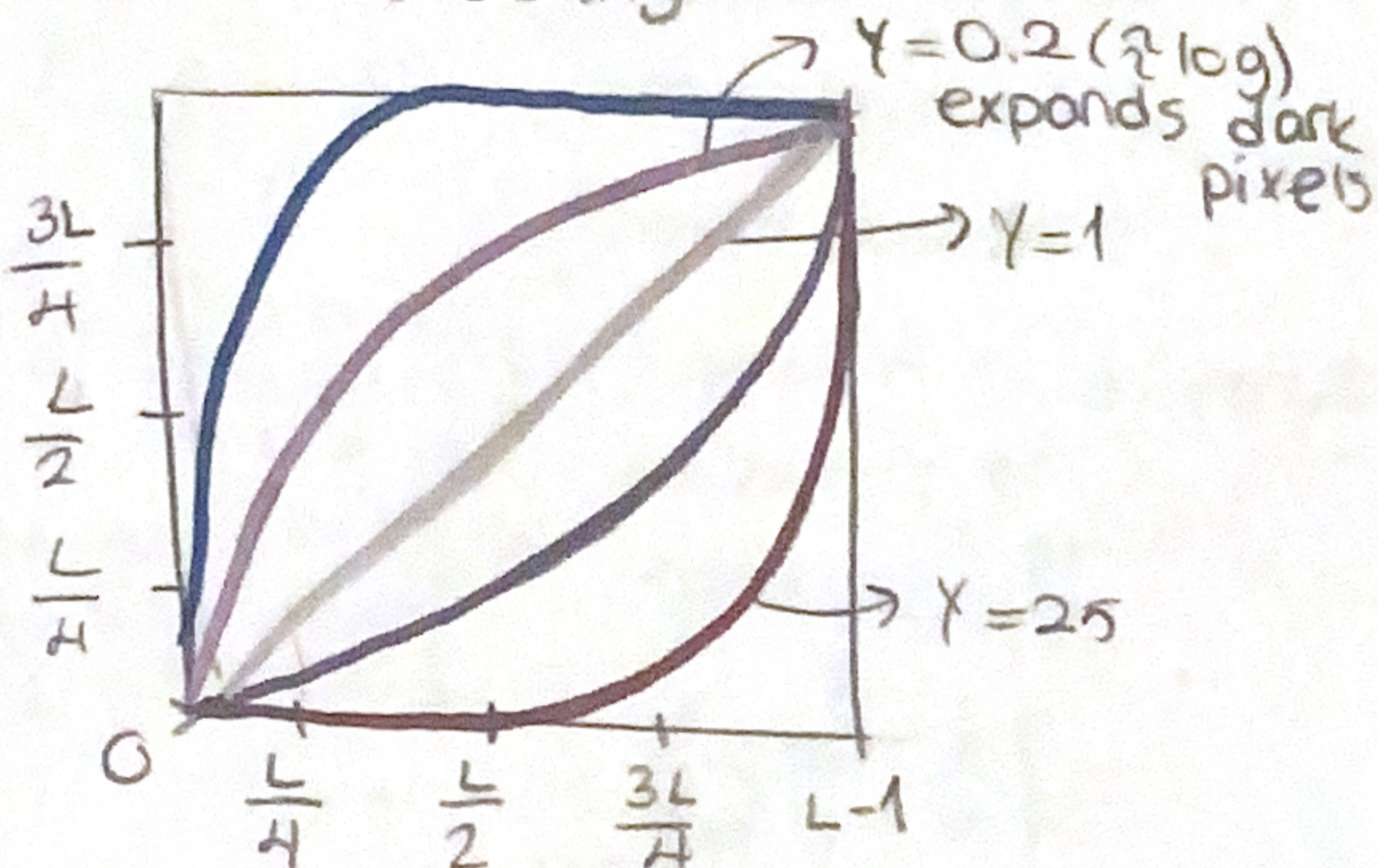
$S = c r^Y \rightarrow c, Y > 0$

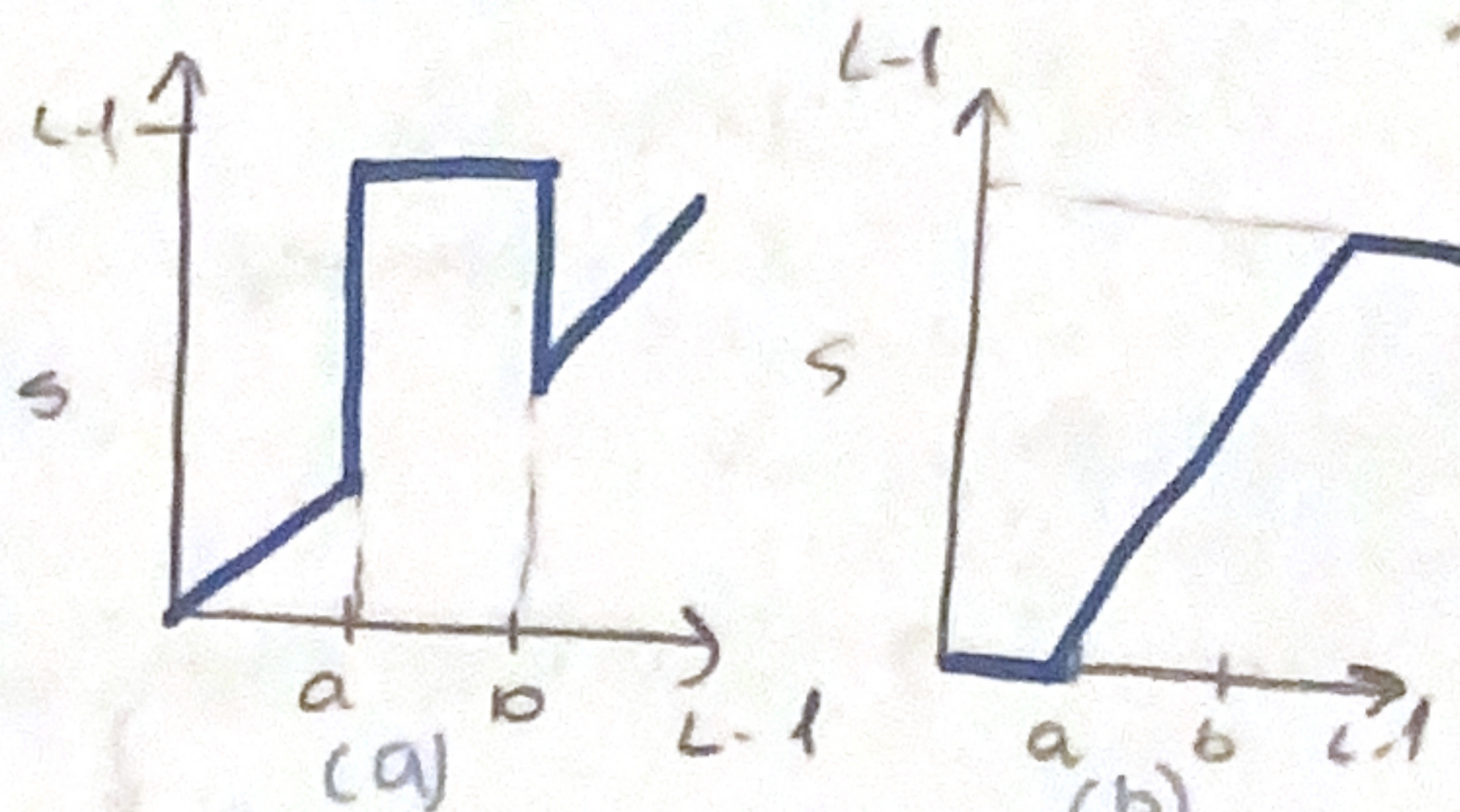$0 < Y < 1 \rightarrow$ expands dark pixels

$Y > 1 \rightarrow$ compresses dark pixels

$c = 1 \rightarrow$ identity

$Y = 0.2$ (? log) expands dark pixels

$\rightarrow Y = 1$

$\rightarrow Y = 25$

Piecewise Linear Transformation

(a)   (b)

$\rightarrow$ Intensity Level Slicing

Highlight specific range of intensities in an image.

(a) Displays only one value in range of interest and rest is black (converts to binary

(b) Brightens a range & leave the rest.

Bit Plane Slicing

$$1\ 1\ 0\ 0\ 0\ 0\ 1\ 0 \rightarrow \text{Bit plane}$$
$$8\ 7\ 6\ 5\ 4\ 3\ 2\ 1$$

most significant bit   least significant bit

$0 \rightarrow 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0$

intensity

All other intensities

$255 \rightarrow 1\ 1\ 1\ 1\ 1\ 1\ 1\ 1$
     $\llcorner$ MSB

Store less planes (with highest significance) to save memory.

Reconstruction $\rightarrow$ Multiply pixels of nth plane by 2^{n-1}
(binary bit $\rightarrow$ decimal)

$\rightarrow$ We can convert images to bit planes.

e.g. 3 bit image

MSB plane

LSB plane

Center bit plane