

ECGR 4101/5101 -

9/28/09

①

$$V_{+ref} = 5V$$

$$V_{in} = 2.0V$$

$$V_{-ref} = 0V$$

$$N = 8$$

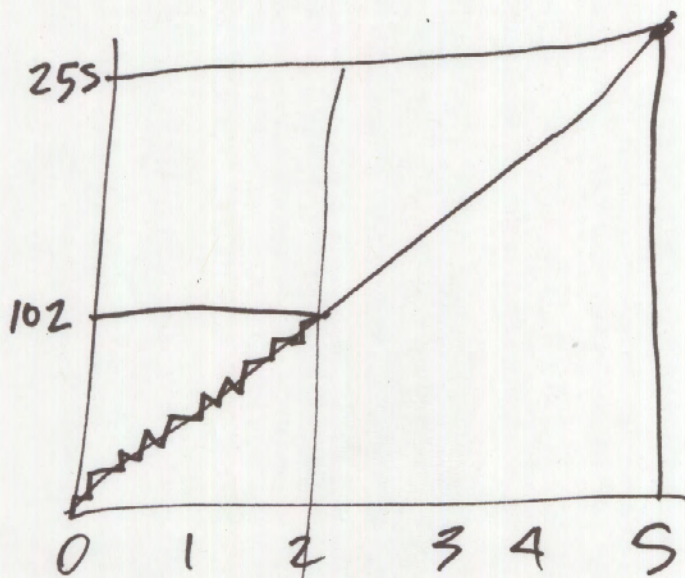
$n$  (decimal, binary)

$$n = \left[ \frac{V_{in} (2^N - 1)}{V_{ref}} + \frac{1}{2} \right]$$

$$= \frac{2}{5} 255 + \frac{1}{2}$$

$$= [102.5]$$

$$= 102 \rightarrow \text{x66}$$



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(2)

Turn to neighbor.....

$$V_{+ref} = 12V$$

$$V_{-ref} = -12V$$

$$N = 10 \text{ bits}$$

$$V_{in} = 5.0V$$

$n$ ? decimal & hex

$$n = \left[ \frac{5V - (-12V) (2^{10} - 1)}{12V - (-12)V} + \frac{1}{2} \right]$$

$$= \left[ \frac{17}{24} \cdot 1023 + \frac{1}{2} \right]$$

$$= 724.62 + \frac{1}{2}$$

$$= 725 \rightarrow \times 2D5$$