ESE562 Project 2

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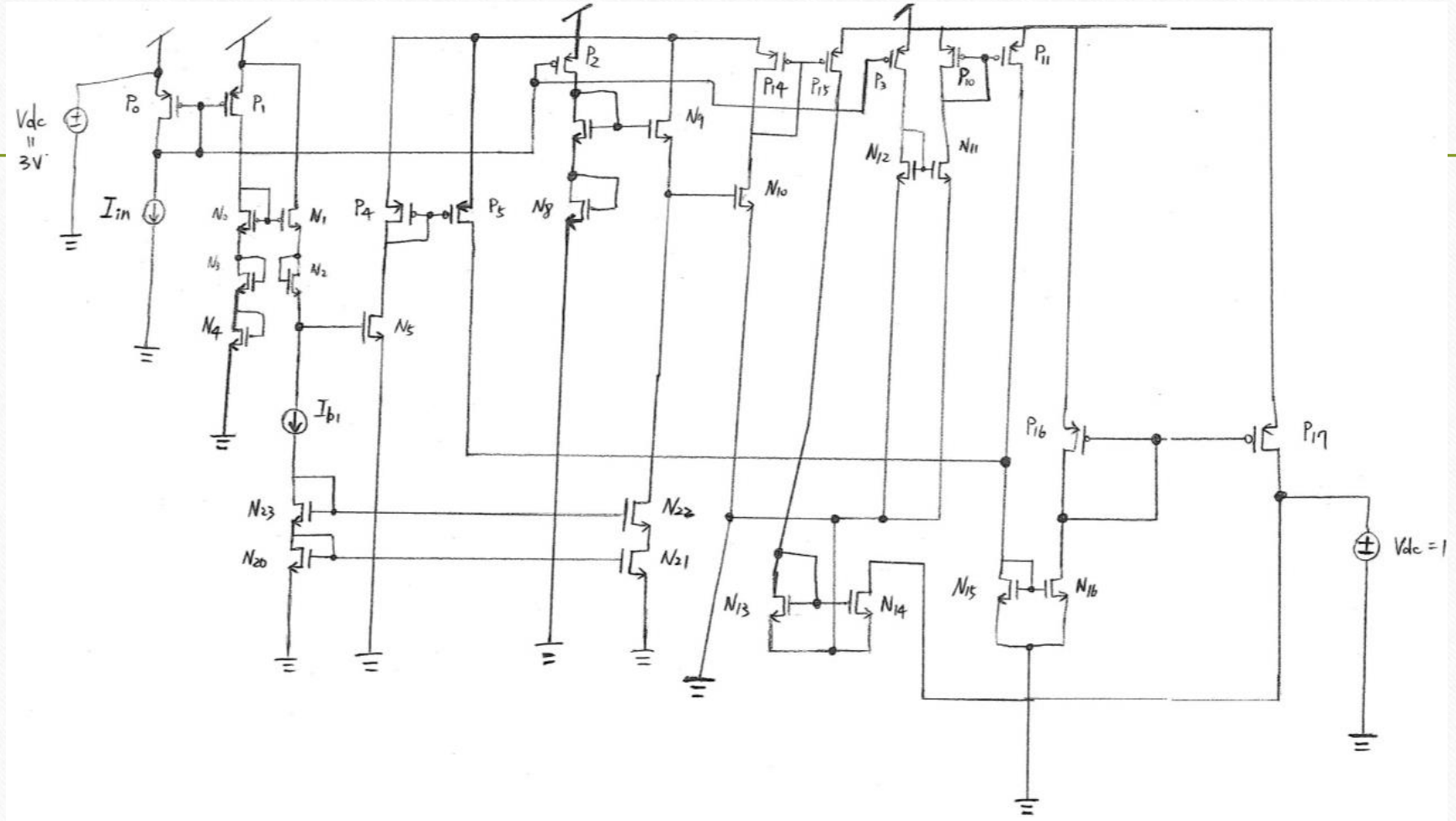
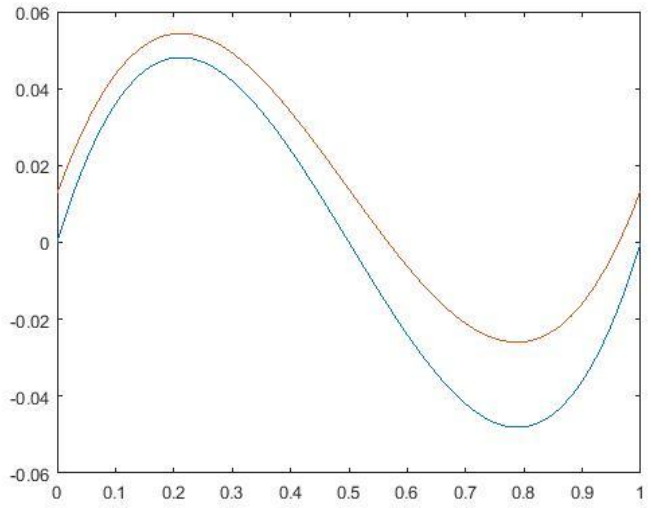
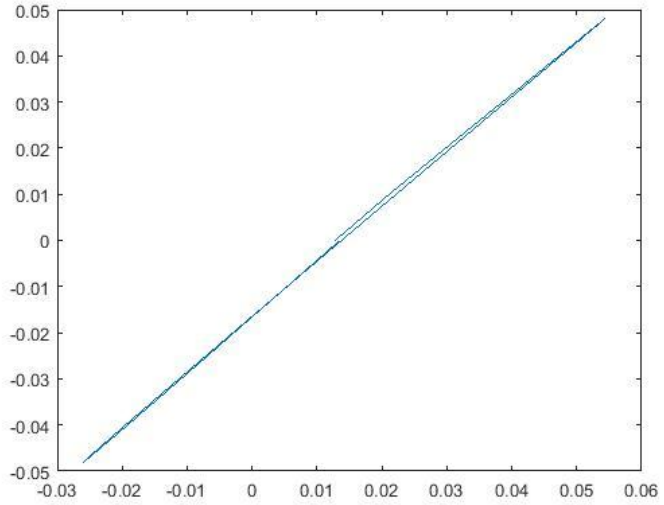
Intro

- Target: $y = x^3 - 1.5x^2 + 0.5x$
- The most intuitive way: Concatenate Squaring Circuits
- Concatenate the circuit of x^3, the circuit of x^2, and the circuit of x **indivisually**

Circuit Schematic







Blue: $y = x^3 - 1.5x^2 + 0.5x$

Red: My Circuit

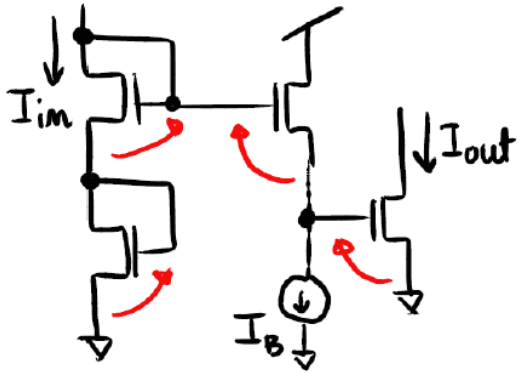
$y = 0.8423x^3 - 1.2653x^2 + 0.4241x$

Results

- Why differ?

1. Since the current that produced by current mirror will not exactly equal to the input. Plus, it's not always be constant as well.
2. When we stack more than 3 MOSFET => the kappa effects accumulated (appears)

- How to improve the design?



$$I_{in} I_{in} = I_B I_{out}$$

$$I_{out} = \frac{I_{in}^2}{I_B}$$