



Q DGGLWLRQ WR VFRULQJZKWWKHQWD UHRSRVLHQ/ LEV
FRQVLGHUDWLHQZHUHQFH JLYPSOLF\ RULJLQDOI

Calculators are NOT permi

7KH HTXDWRUHSUHVHQWV D SDUDERODPRU DOO U

$$L f x \frac{x}{x} DQG f_n L f f_n x$$

nIRU « &RPSXWH ZLWK SURRI

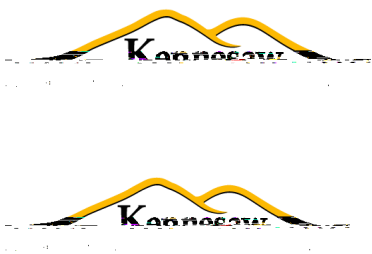
&RQVLGHU WKH WKUHHHQXPEHUWKHUH D SRVLWLYH LC

D)LQG ZLWK SURRIHQZLYXOXHQ WKUHH QXPEHUV D

E3URYH WKDW WKHUH DUHQIZQLWIKQRHQRIYVQHW
LV D SULPH QXPEHU

WKH FRUHFWRURRPNH\

,Q WKH ILJXUH \$%&' LV D V\$XDUH 0 LV WKH PLGSRI
DQG 1 LV WKH%PLGSRHQWQHUVHFW DW



THE 2012-2013 KENNESAW STATE UNIVERSITY
HIGH SCHOOL MATHEMATICS COMPETITION
PART II



SOLUTIONS

D ~~HWVRVKRWKDWKHUHLVRLQ y KLKSDVHVWVKURKDOSDBROD~~
~~ZWKHTWLRQRIWKHIRUR~~ $\sum_{k=0}^n \binom{n}{k} a^k$ ~~HW mQ n~~

\emptyset

$$x^{-1} - R \quad y^{-1} -$$

E ~~Q~~ $y^{-1} x^k \sum_{k=0}^n \binom{n}{k} a^k$
~~Q~~ $y^{-1} x \sum_{k=0}^n \binom{n}{k} a^k = a^{-1} x \sum_{k=0}^n \binom{n}{k} a^k$
~~Q~~ $\sum_{k=0}^n \binom{n}{k} a^k = a^n$
 $y^{-1} f(x) = \sum_{k=0}^n \binom{n}{k} x^k$

~~Q~~

$$f(x) = \sum_{k=0}^n \binom{n}{k} x^k = f(x) = f(x) = \sum_{k=0}^n \frac{\binom{n}{k} x^k}{x^k} = \sum_{k=0}^n \binom{n}{k} = 2^n$$

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