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U.S. AIR FORCE
Project RAND
RESEARCH MEMORANDUM

FC

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U. S. AIR FORCE

PROJECT RAND

RESEARCH MEMORANDUM

GRAPHS OF PARTIAL SUMS OF THE BINOMIAL DISTRIBUTION

Herman Kahn and Irwin Mann

RM-1880

ASTIA Document Number AD 123517

27 February 1957

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Graphs of Partial Sums of the Binomial Distribution

The following graphs were used in calculations for "Techniques of Systems Analysis," RM-1829. We have had a number of requests for their use for general purposes and so are making them available here.

The values used are simply taken from the tabulations of:[1]

$$R = \sum_{i=r}^{n} \binom{n}{i} p^{i} (1-p)^{n-i}$$

If

n = total number of trials

p = probability of success of any trial

R = probability of at least r successes,

the graph can be used to:

1) read off the probability of any particular number of successes, and/or

2) Monte Carlo the probability of r successes in n trials.

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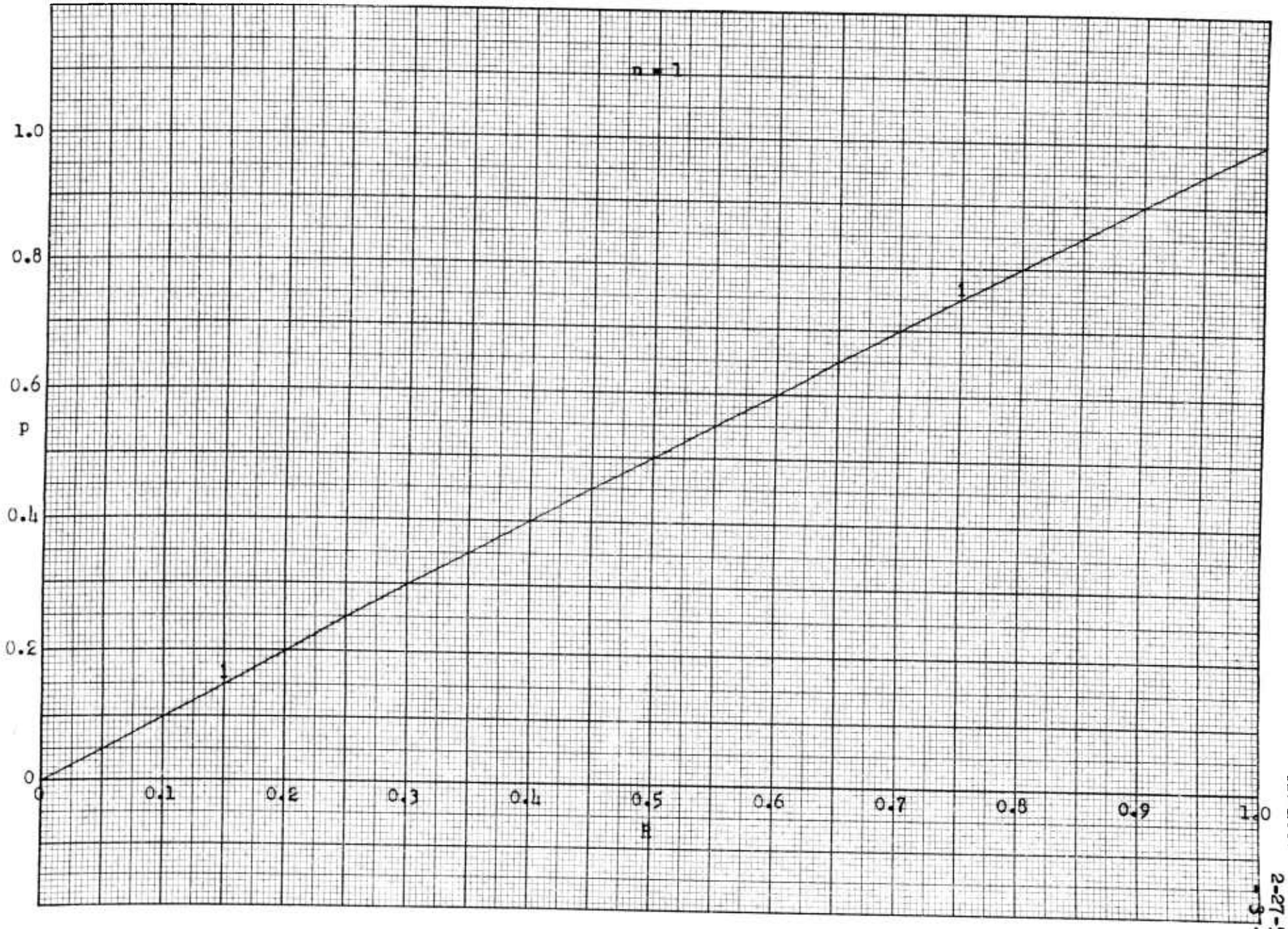
[1] National Bureau of Standards, Applied Mathematics Series 6.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1.0
0.8
0.6
p
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
R
1
1

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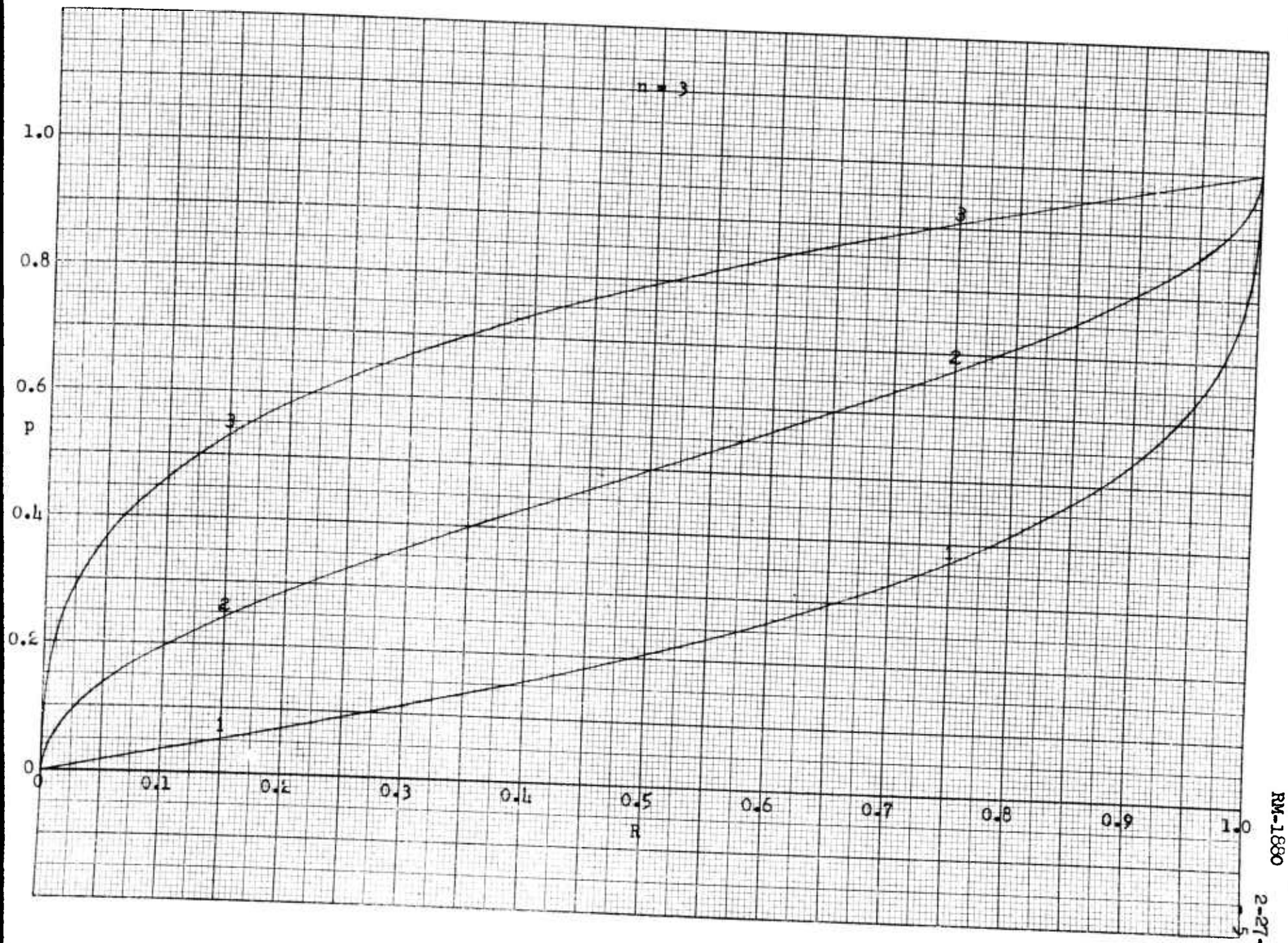
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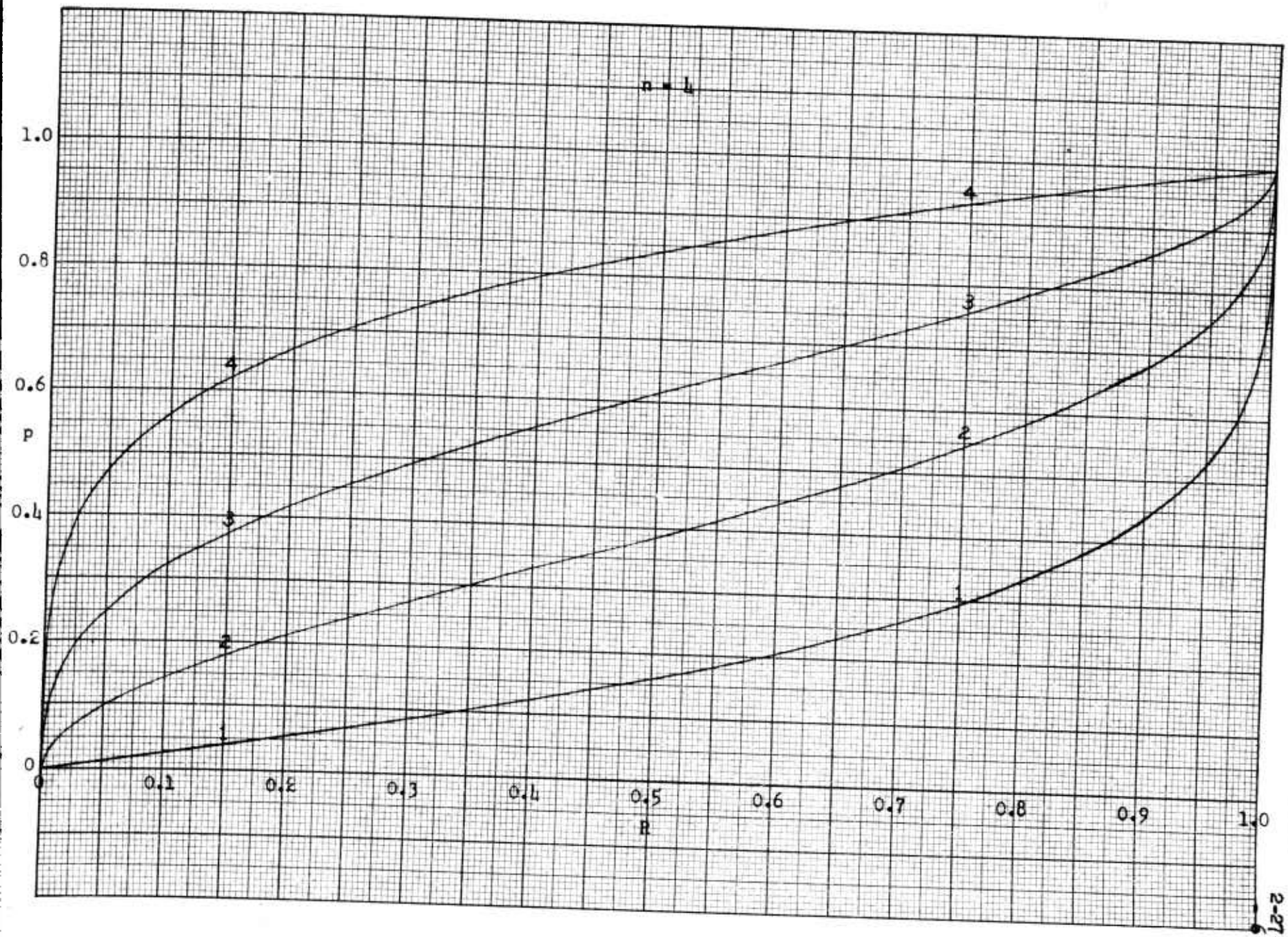
0.8
0.6
p
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
R
1
2
3
1
2
3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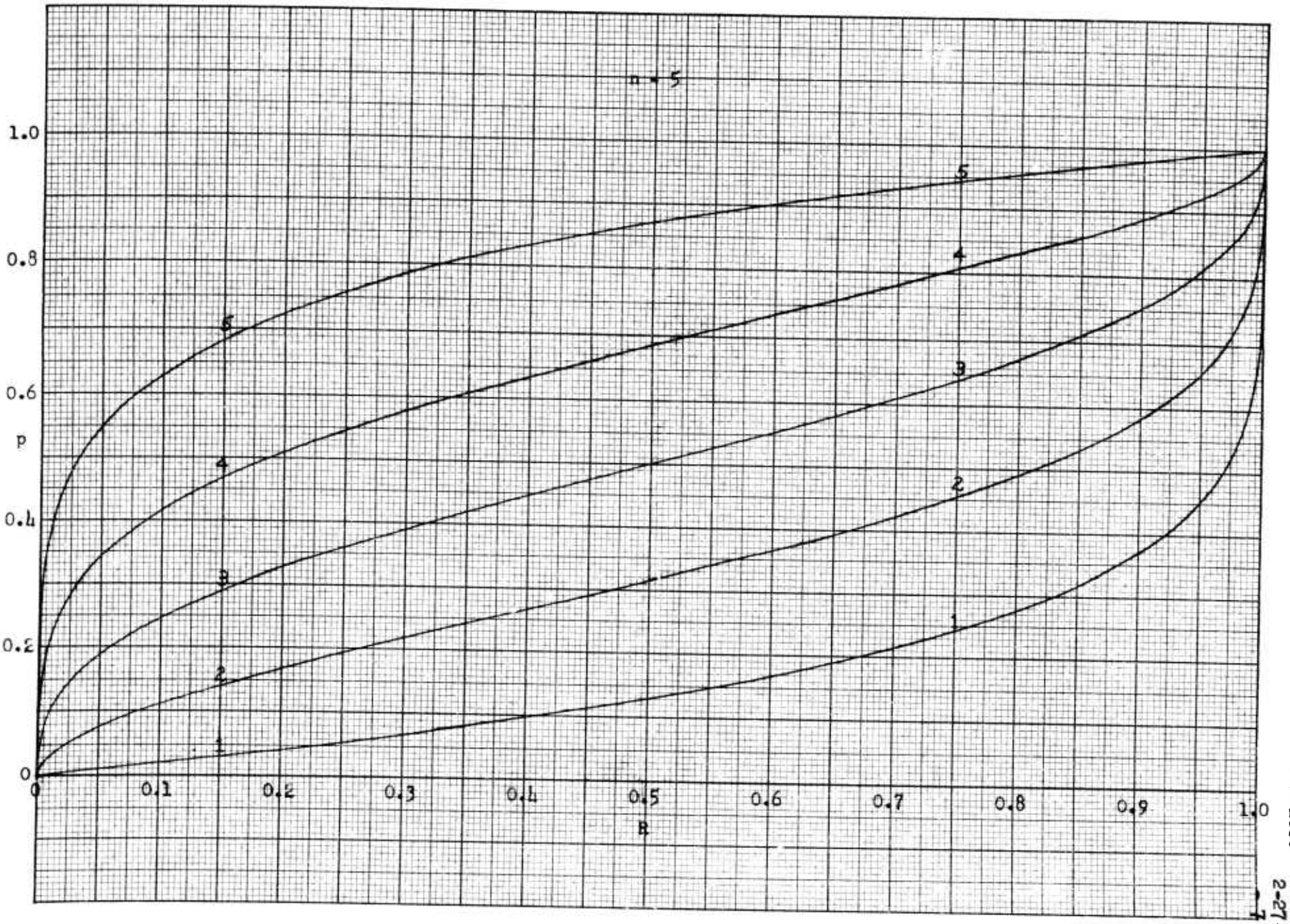
0.6
P
0.4
0.2
0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
R
1
2
3
4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0.6
0.4
0.2
0
p
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
R
1
2
3
4
5
6

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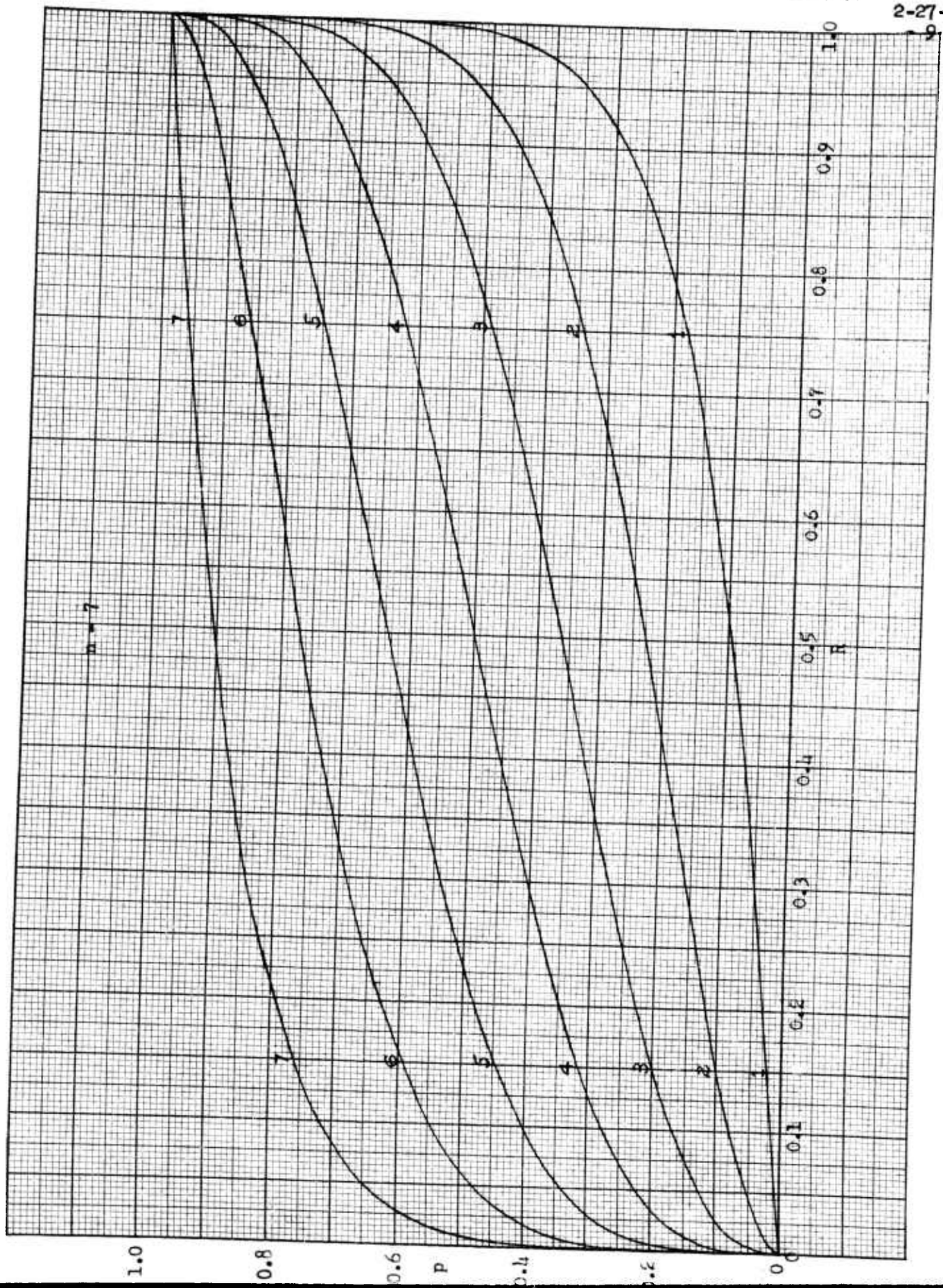

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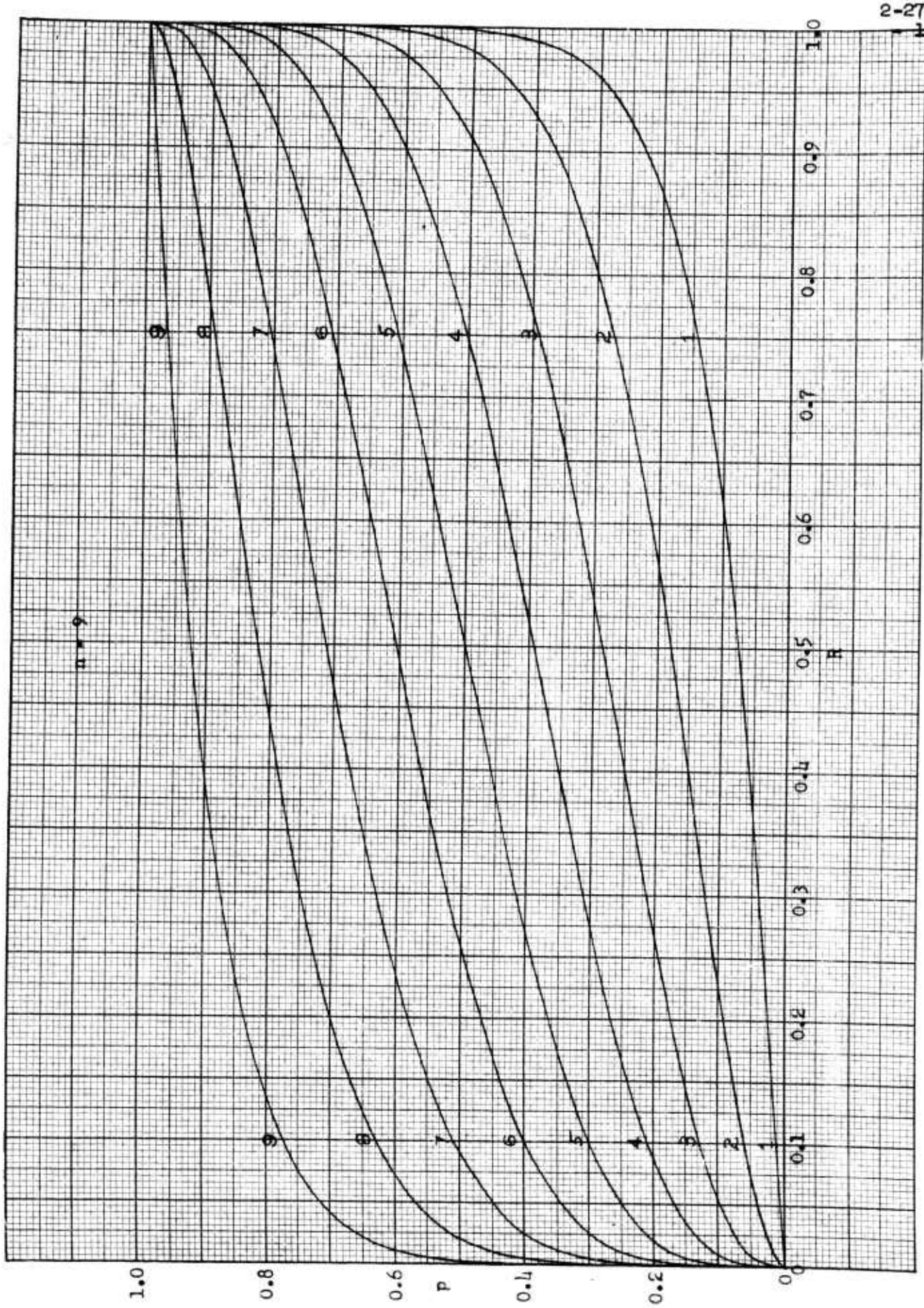

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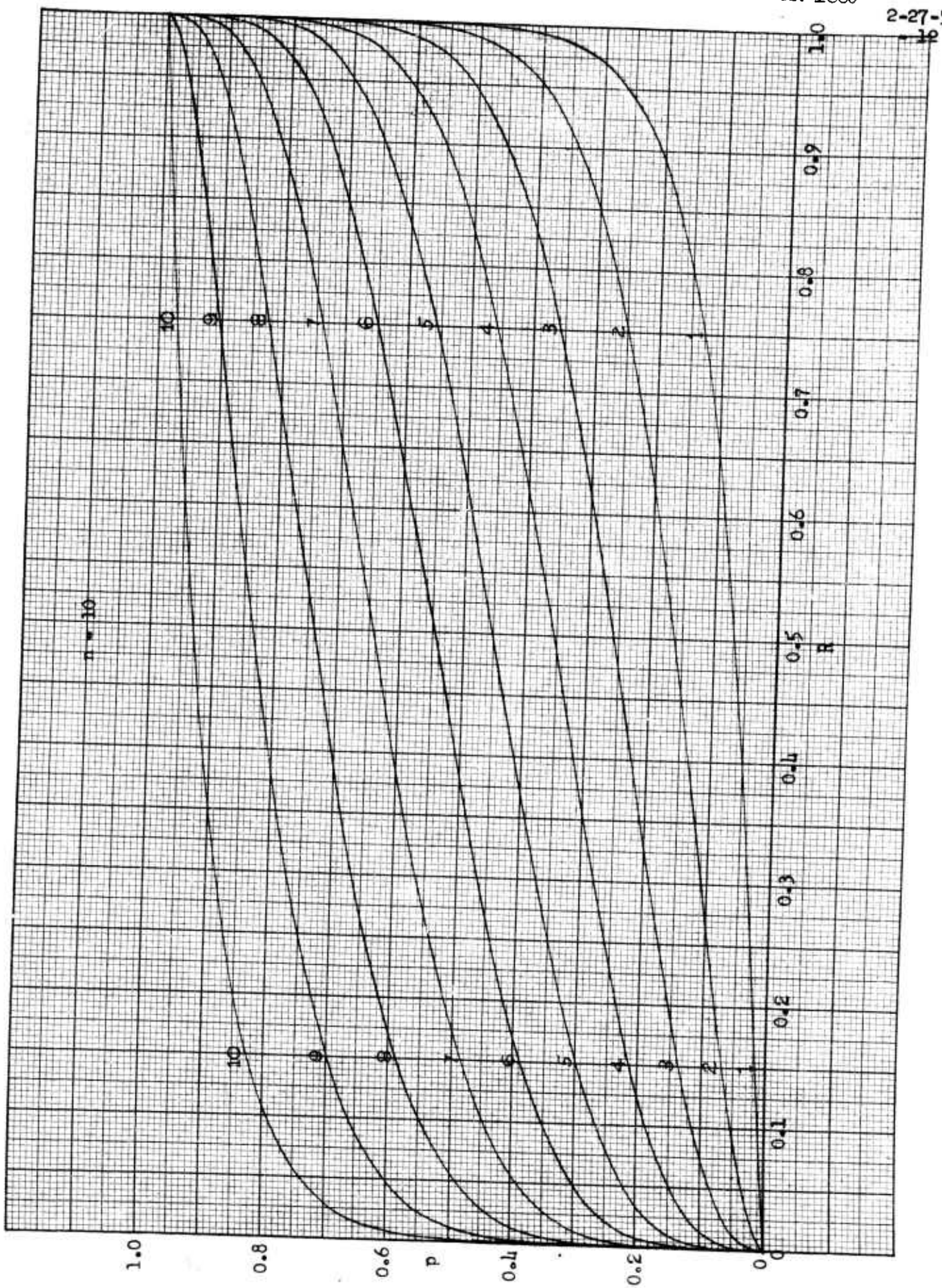

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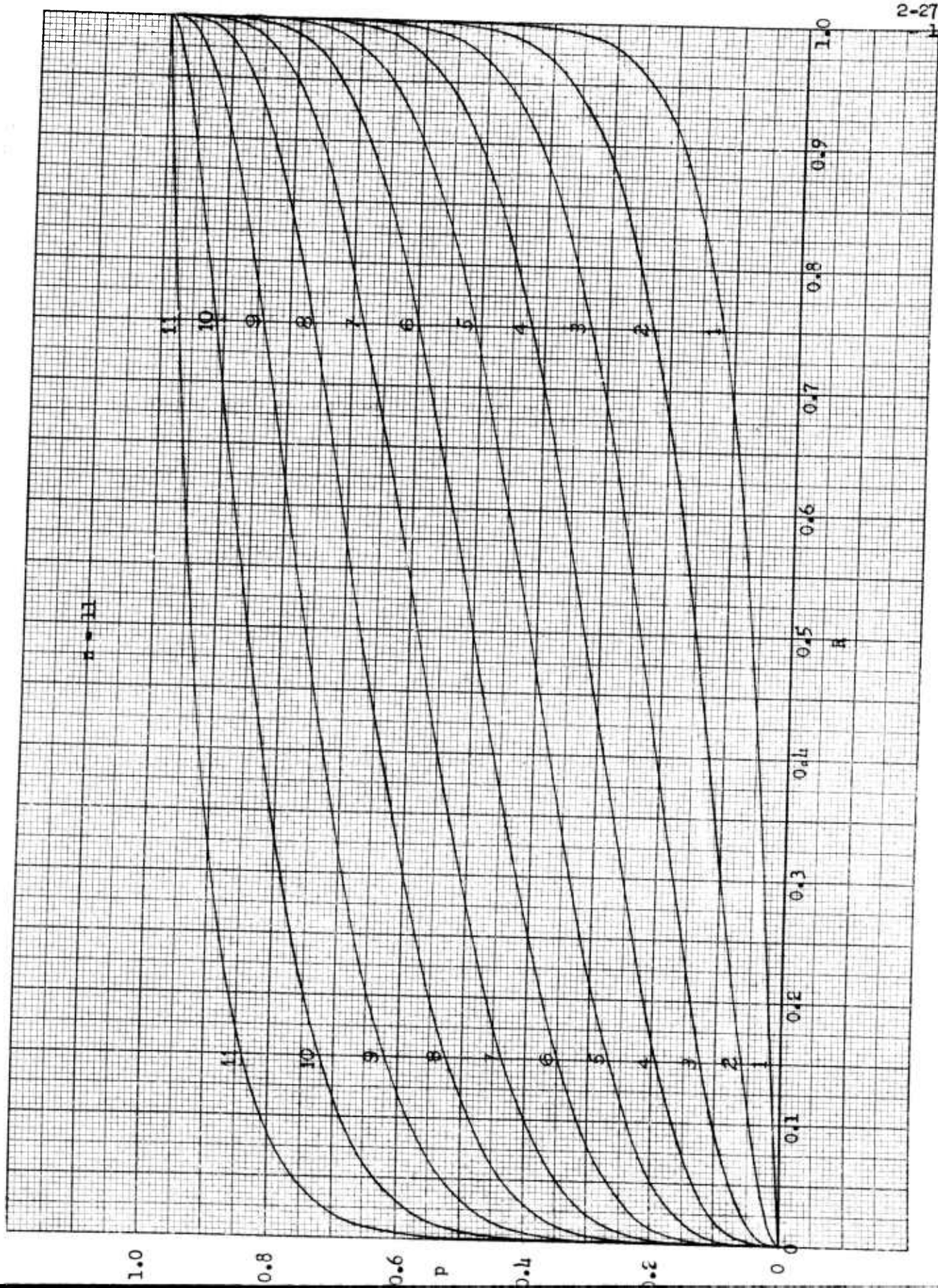

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