ELEMENTS OF ELECTRICAL ENGINEERING
Course Code : UE25EE141A/B

PES UNIVERSITY

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ELEMENTS OF ELECTRICAL ENGINEERING

Numerical Examples – Star-Delta Transformation

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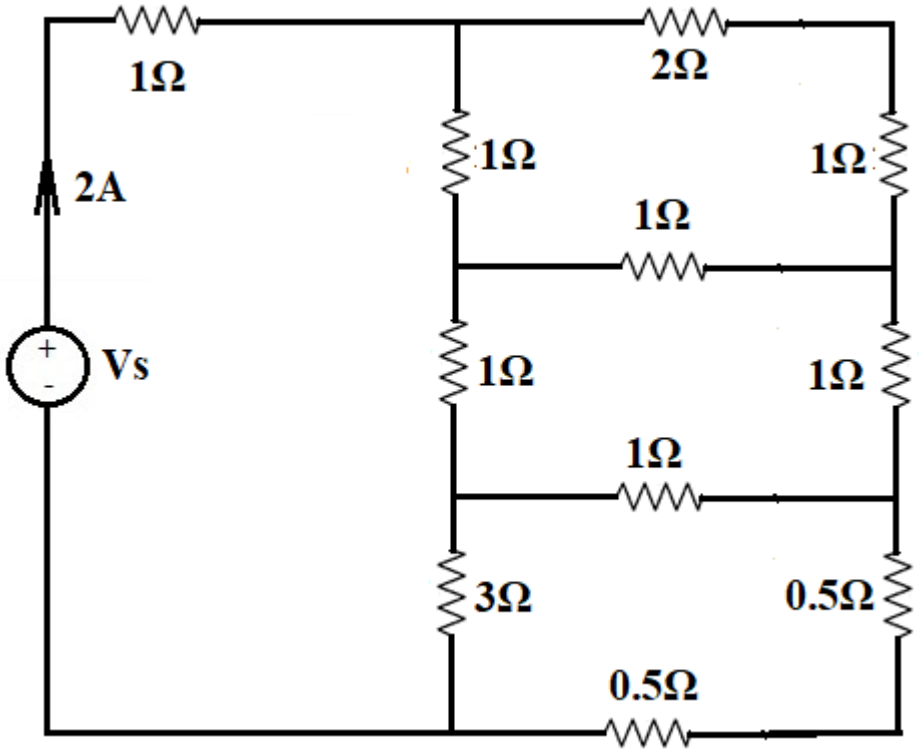
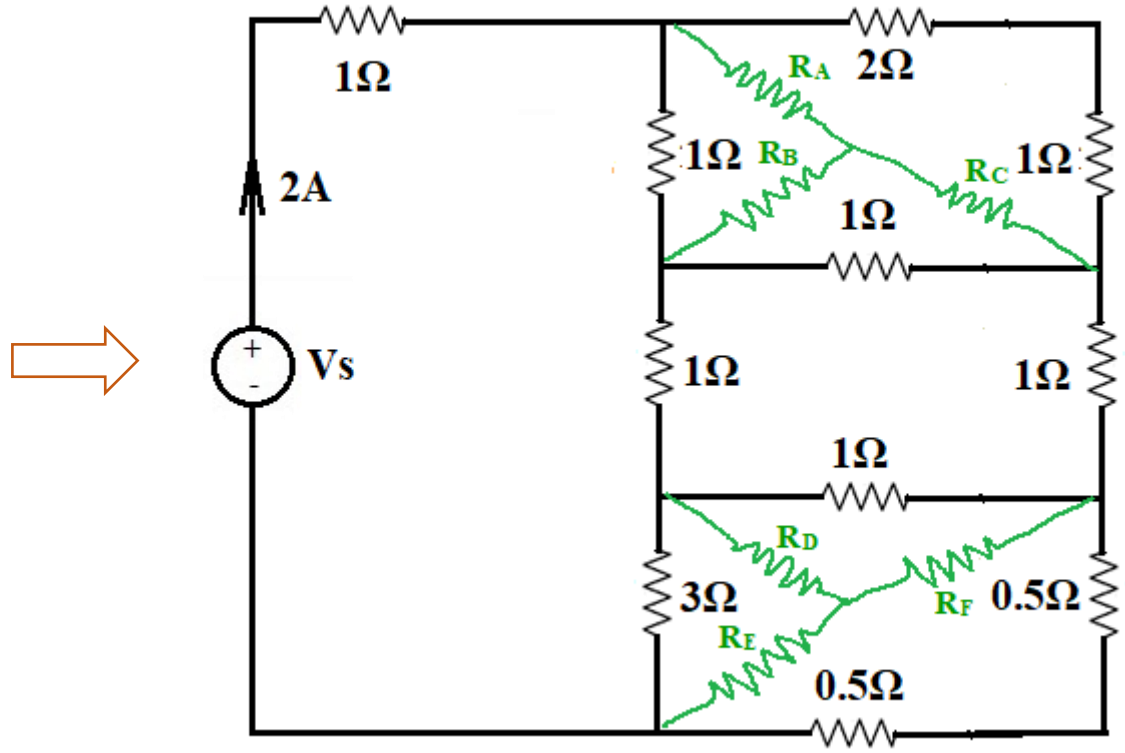
ELEMENTS OF ELECTRICAL ENGINEERING

Star Delta Transformations – Numerical Example

Find V_s , which delivers a current of 2A through the circuit shown below.



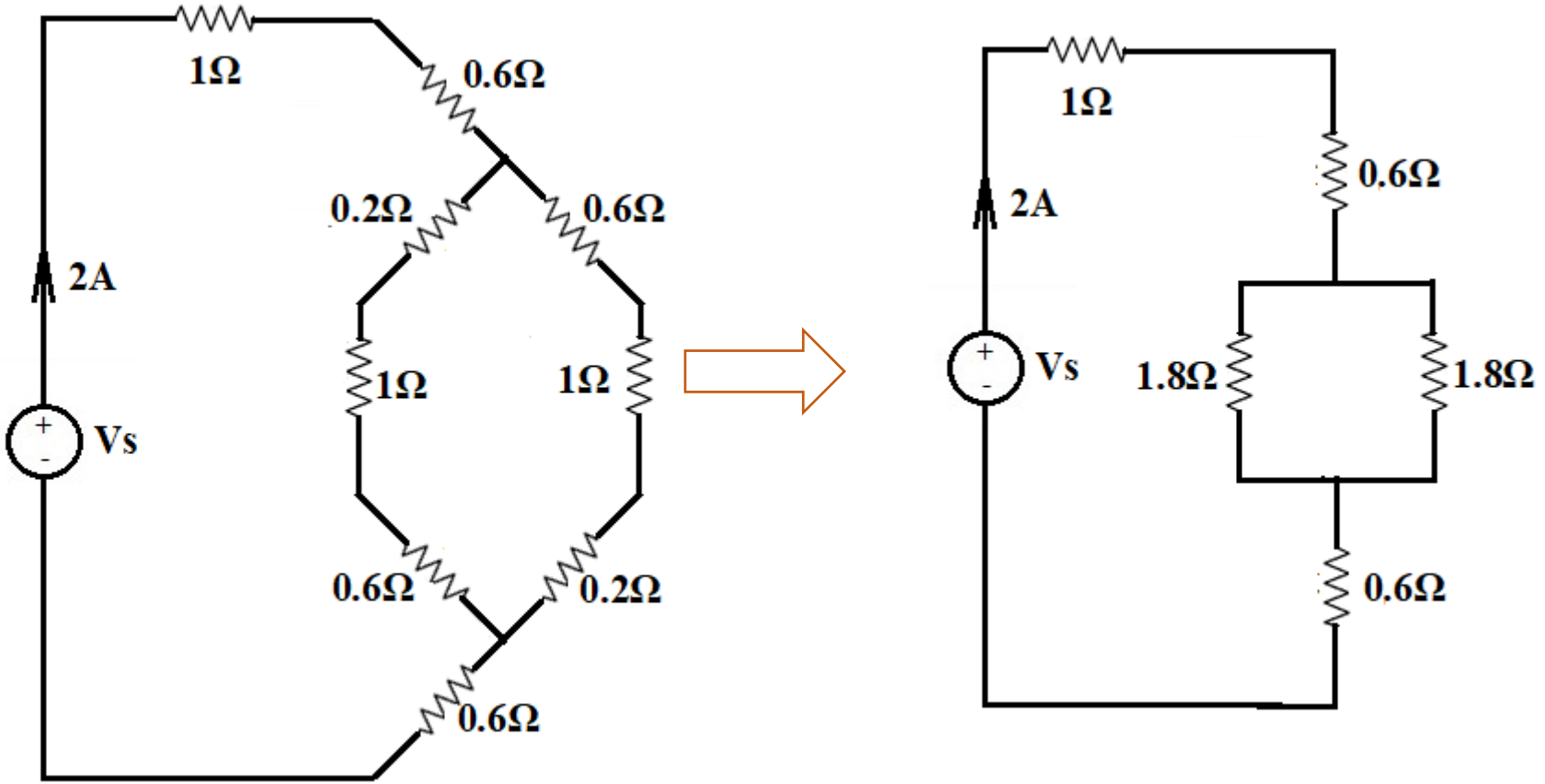


$R_A = 0.6\Omega = R_B = R_D = R_E$

$R_C = 0.2\Omega = R_F$

ELEMENTS OF ELECTRICAL ENGINEERING

Star Delta Transformations – Numerical Example



$1.8 \| 1.8 = 0.9\Omega$

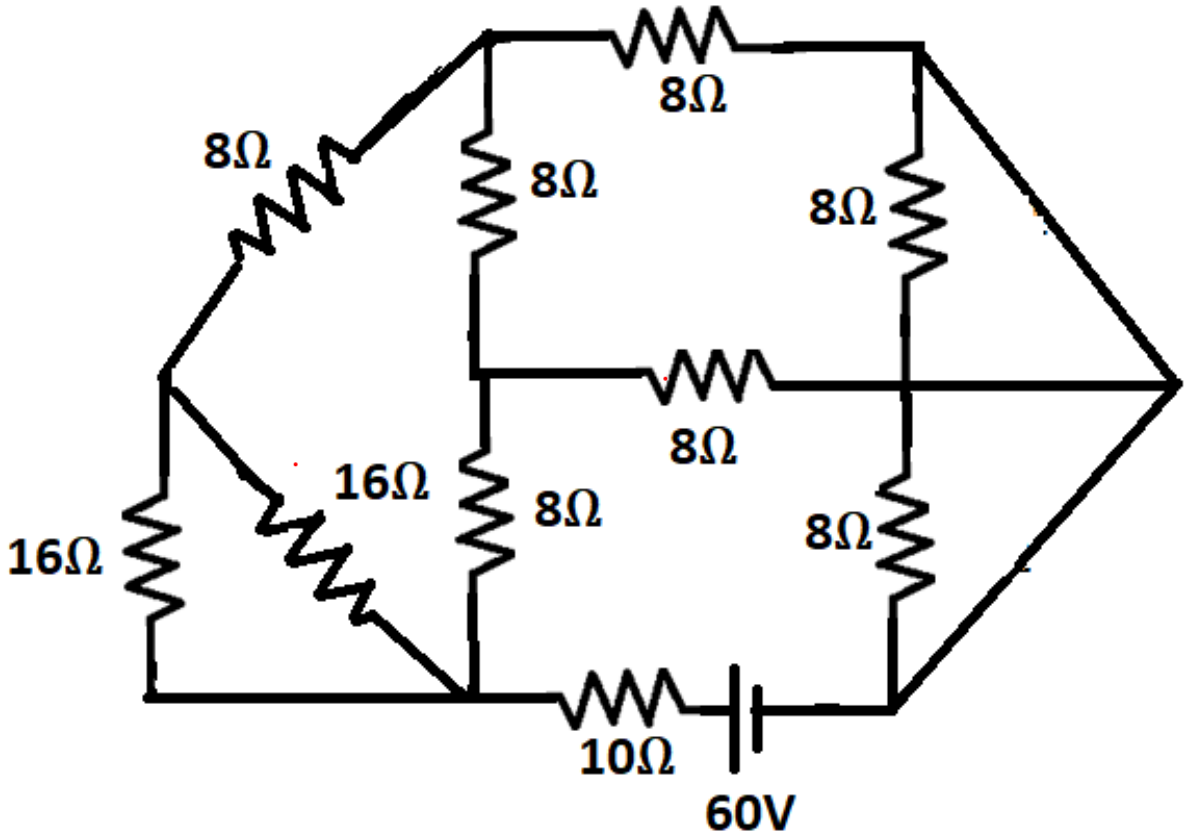
$R_T = 3.1\Omega$

$V_S = 6.2V$

Star Delta Transformations – Numerical Example

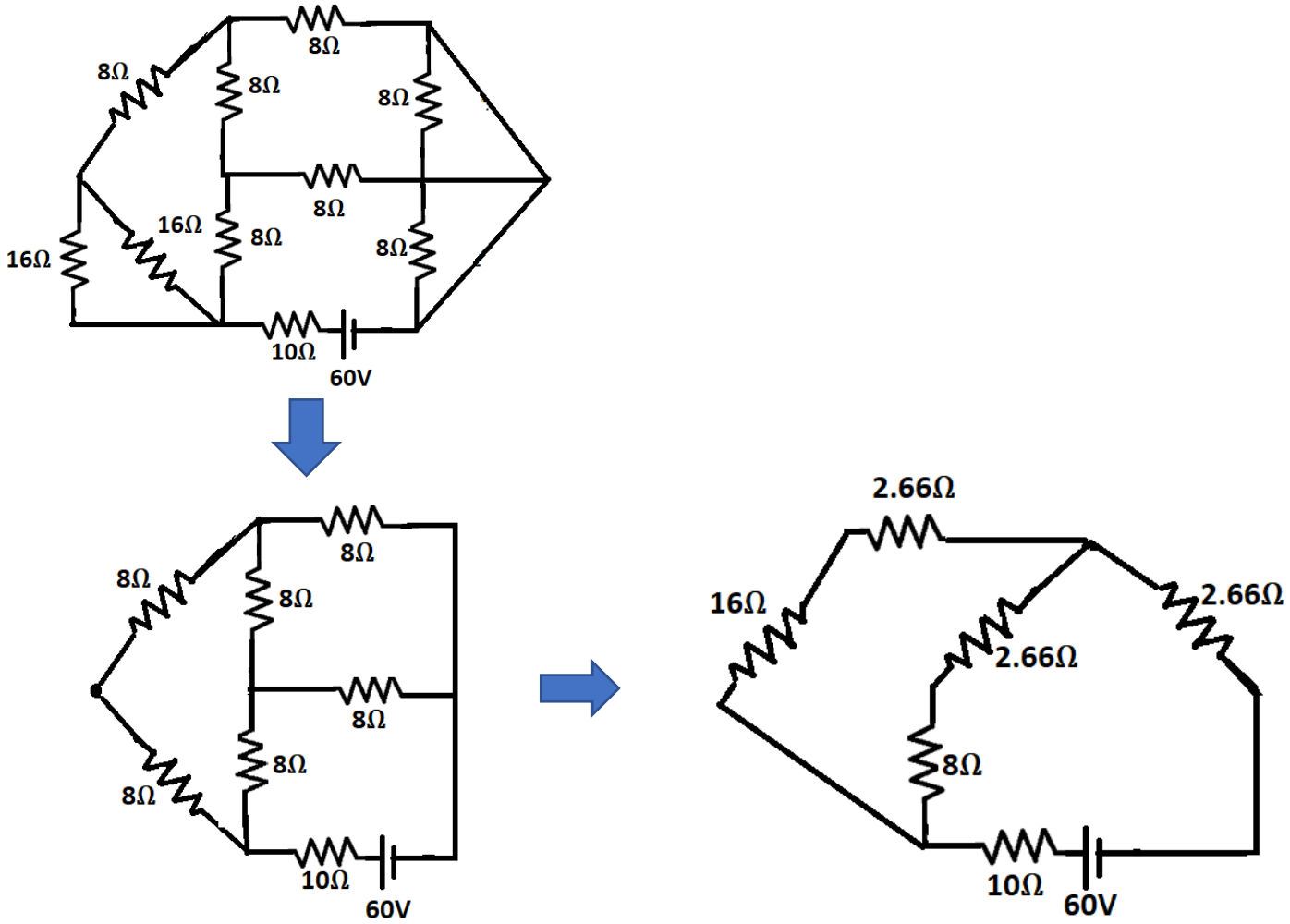
Question:

Find the voltage drop across 10Ω resistor in the network shown.



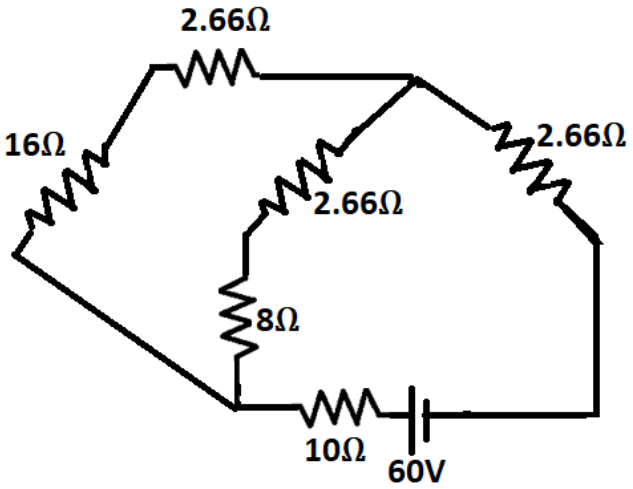
Star Delta Transformations – Numerical Example

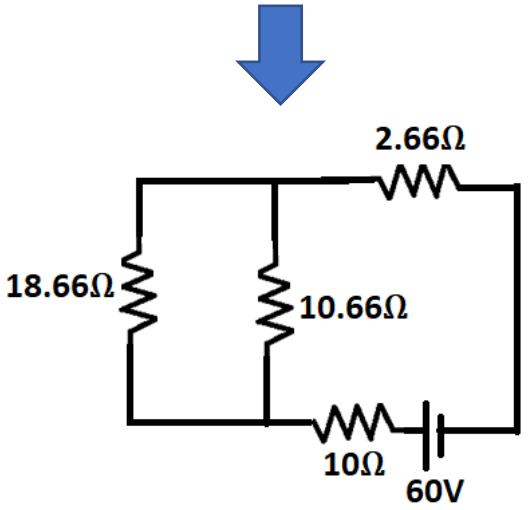
Solution:

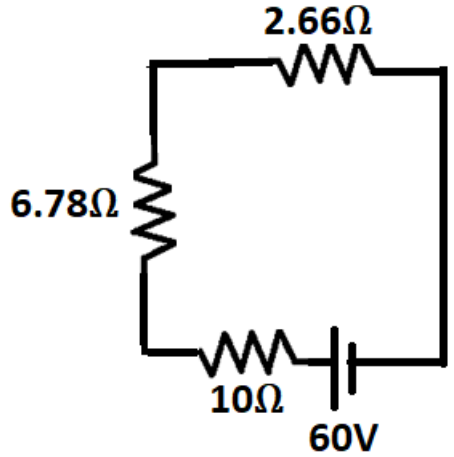


Star Delta Transformations – Numerical Example

Solution (Continued..) :

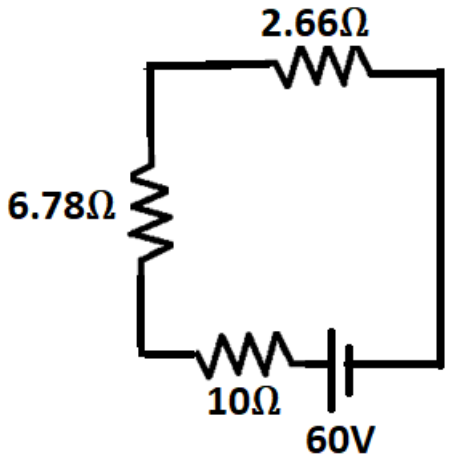






Star Delta Transformations – Numerical Example

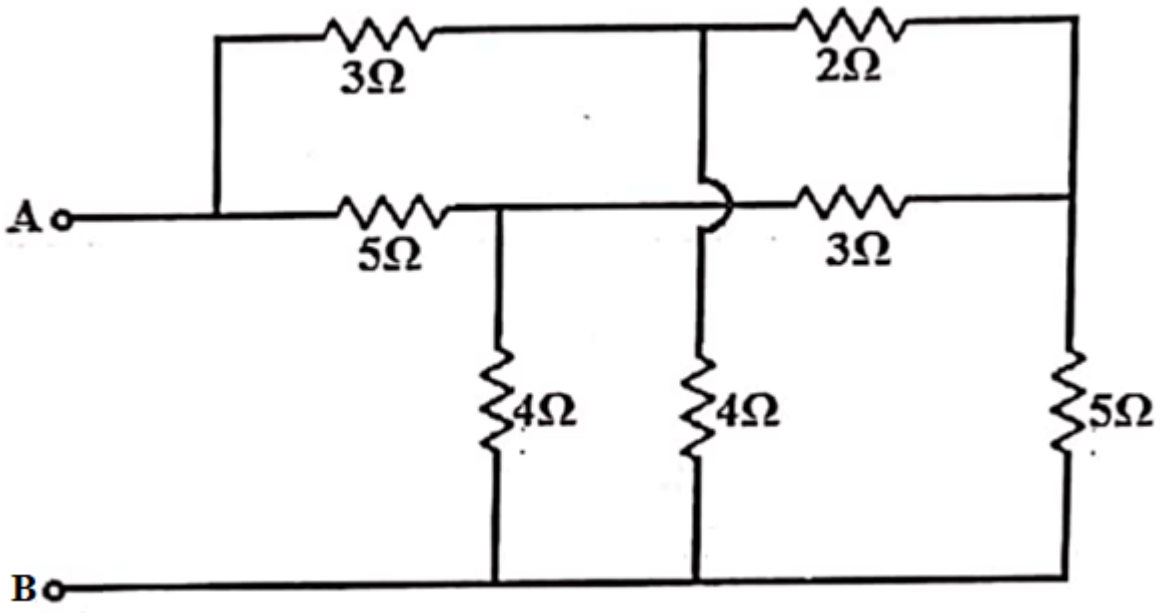
Solution (Continued..) :



Current delivered by 60V source, $I_S = \frac{60}{R_{eq}} = \frac{60}{19.44} = 3.086A$

Voltage drop across 10Ω resistor = I_S*10 = 30.86V

Find the equivalent resistance between the terminals A & B in the given network.



ANSWER : 3.41Ω

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Text Book & References

Text Book:

1. "Basic Electrical Engineering" S.K Bhattacharya, 1st Edition Pearson India Education Services Pvt. Ltd., 2017
2. "Basic Electrical Engineering", D. C. Kulshreshta, 2nd Edition, McGraw-Hill. 2019
3. "Special Electrical Machines" E G Janardanan, PHI Learning Pvt. Ltd., 2014

Reference Books:

1. "Engineering Circuit Analysis" William Hayt, Jack Kemmerly, Jamie Phillips and Steven Durbin, 10th Edition McGraw Hill, 2023

2. "Electrical and Electronic Technology" E. Hughes (Revised by J. Hiley, K. Brown & I.M Smith), 12th Edition, Pearson Education, 2016.

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THANK YOU

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