Question 1:
Use only source transformation to compute the voltage V in the circuit shown below.


Source Tanfarmation - Masoud
W

Use the Source Transformation method to Compute the village $V$ in the Circuit shown below:


$$
\therefore V=6 \text { Volts. }
$$

Question 2:
Apply circuit reduction method for the circuit shown below to obtain the following:
a) The voltage $\mathbf{v}_{\mathrm{x}}$.
b) The current $i_{x}$.
c) The power supplied by the independent current source.


$$
\begin{align*}
& \text { Total } 10 \text { points } \\
& V_{x}=\frac{-2}{\frac{1}{3}+\frac{1}{3}+\frac{1}{3}}=-2 \mathrm{~V} \\
& i_{x}=\frac{-V_{x}}{3}=2 / 3 \mathrm{~A}  \tag{1}\\
& P_{2 A}=-2 V_{x}=4 \mathrm{~W} \tag{2}
\end{align*}
$$

(2)


Circint reduction



## Question 3:

Use the direct method for the circuit shown below to obtain the $3 \Omega$ following:
a) The voltage $\mathbf{v}_{\mathbf{x}}$.
b) The current $i_{x}$.
c) The power absorbed by the $3 \Omega$ resistor.

Total 10 points

$$
\begin{align*}
& K V L: V_{x}=4 i_{x}^{\prime}  \tag{1}\\
& \Rightarrow i_{y}^{\prime}=\frac{V_{x}}{4}=\frac{4 i_{x}}{4}=i_{x}^{\prime}
\end{align*}
$$

KVL for the outenlog

$$
6=3\left(4+2 i_{x}\right)+4 i_{x}
$$



$$
\begin{equation*}
\Rightarrow i_{x}=\frac{-6}{10}=-3 / 5 A \tag{2}
\end{equation*}
$$

$$
\begin{equation*}
v_{x}=4 i_{x}^{\prime}=-12 / \mathrm{s} \mathrm{~V} \tag{2}
\end{equation*}
$$




The power absorbed by the $3 \Omega$ resistor:
Find the voltage across the $3 \Omega$ resistor which is:
$V_{3 \Omega}=6-v_{x}=6+\frac{12}{5}=\frac{42}{5}$
$P_{3 \Omega}=\frac{V_{3 \Omega}^{2}}{3}=\frac{588}{25}=23.52 \mathrm{watt}$
Or find the current passing through the $3 \Omega$ resistor which is:
$I_{3 \Omega}=4+2 i_{x}=4-\frac{6}{5}=\frac{14}{5}$
$P_{3 \Omega}=3 I^{2}{ }_{3 \Omega}=3 \times \frac{196}{25}=\frac{588}{25}=23.52 \mathrm{watt}$

