15.36

$\vec{\omega}_{A B C}=3 \mathrm{rad} / \mathrm{R} \partial \quad \vec{v}_{p}=?$

Pointe is the point of contat between geara $A \& B$.

$$
\begin{aligned}
& \pm \sum V_{x}: 550(3)=150 \omega_{A} \\
& \omega_{A}=\frac{550(3)}{5 a}=11 \quad \overrightarrow{\omega_{A}}=111 \mathrm{ad} / 25
\end{aligned}
$$

$$
\vec{v}_{E}=\vec{v}_{E / F}+\vec{v}_{F}=\vec{v}_{E / F}=\vec{v}_{E / B}+\vec{v}_{B}=\vec{v}_{E / B}+\left(\vec{v}_{B / C}+\stackrel{\rightharpoonup}{v}_{E}\right)=\vec{v}_{E / B} / \vec{v}_{B / C}
$$

$2 \pm \sum V_{x}: \quad 300 .(11)=12 a \omega_{B}+3 \sin (3), \quad \omega_{B}=33-9=24 \quad \vec{\omega}_{B}=24 \mathrm{rad} / \mathrm{k} 2$
$=-240 \vec{j}-900 \vec{i}$


$$
\vec{\omega}_{A B}=10 \mathrm{rad} / \mathrm{R}
$$

(a) $v_{B^{\prime}}=\vec{\lambda}_{B^{\prime}}, \vec{v}_{B}$ ?
(b) $\vec{v}_{D}=$ ?
$B^{\prime}$ is a point on $C D$ (a) yes

$$
\text { (b) } \vec{v}_{B^{\prime}}=\vec{v}_{B^{\prime} / c}+{\overrightarrow{b_{X}}}_{a}
$$

$$
\begin{aligned}
& =100 \omega_{c y}(4 \vec{i}+3 \vec{j}) \\
& \begin{aligned}
\vec{v}_{B} & =\vec{v}_{B / A}+\vec{v}_{A}=\vec{v}_{B / A}=\left[B \sum_{3}^{A} 500(10)\right]=\frac{500(10)}{5}(4 \hat{i}-3 \vec{j}) \\
& =1000(4 \vec{i}-3 \vec{j})
\end{aligned} \\
& 100 \omega_{C D} \sqrt{(4)^{2}+(3)^{2}}=\frac{1}{5}(4 \vec{i}+3 \vec{j}) \cdot 1000(4 \vec{i}-3 \vec{j}) \\
& 500 \omega_{C D}=200(16-9)=200(7), \omega_{C D}=\frac{1400}{500}=2.8 \\
& \vec{\omega}_{C D}=2.8 \mathrm{rad} / \mathrm{s} 5 \\
& \vec{v}_{D}=\vec{v}_{D / C}+\vec{v}_{c}=\vec{v}_{D / c}=\ldots . \vec{v}_{D}=\square
\end{aligned}
$$

$$
\begin{aligned}
& \begin{array}{l}
700-550=150 \\
\vec{v}_{A}=\vec{v}_{A / C}+\vec{v}_{g}=\vec{v}_{A / C}
\end{array} \\
& =\vec{v}_{A / F}+\vec{v}_{A}=\vec{v}_{A^{\prime / F}} \\
& \vec{v}_{A_{d}}=\vec{v}_{A_{F}}
\end{aligned}
$$

