

Έχουμε

$$\begin{aligned}
 \overrightarrow{AM} + \overrightarrow{AN} & \stackrel{\substack{\overrightarrow{AM} = \overrightarrow{AB} + \overrightarrow{BM} \\ \overrightarrow{AN} = \overrightarrow{AD} + \overrightarrow{DN}}}{=} \overrightarrow{AB} + \overrightarrow{BM} + \overrightarrow{AD} + \overrightarrow{DN} = \\
 \overrightarrow{BM} = \frac{1}{2}\overrightarrow{BG} = \frac{1}{2}\overrightarrow{AD} & \quad \overrightarrow{DN} = \frac{1}{2}\overrightarrow{AB} \\
 & = \overrightarrow{AB} + \frac{1}{2}\overrightarrow{AD} + \overrightarrow{AD} + \frac{1}{2}\overrightarrow{AB} = \\
 & = \frac{3}{2}\overrightarrow{AB} + \frac{3}{2}\overrightarrow{AD} = \frac{3}{2}(\overrightarrow{AB} + \overrightarrow{AD}) \stackrel{\overrightarrow{AB} + \overrightarrow{AD} = \overrightarrow{AG}}{=} \frac{3}{2}\overrightarrow{AG}
 \end{aligned}$$

