(6-11,4)

Stokes Theorem says $\int \nabla \times \mathbb{V} \cdot \mathbb{n}\, d\sigma = \oint_C \mathbb{V} \cdot d\mathbf{r}$ for any surface bounded by closed path C.
Hence, C for the surface given lies in the x, y plane and so we can substitute the triangular area in the x, y plane for the given surface. The plane

$$2x + 3y + 4z = 12$$

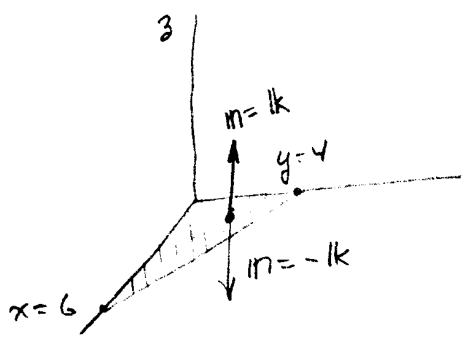
intercepts the x axis at $x = 6$, & the y axis at $y = 4$

Now $\nabla \times \mathbb{V} = \nabla \times (y\mathbb{i} + 2\mathbb{j}) = -\mathbb{k}$

Hence $(\nabla \times \mathbb{V}) \cdot \mathbb{n} = -\mathbb{k} \cdot \mathbb{k} = -1$

$$\int (\nabla \times \mathbb{V}) \cdot \mathbb{n}\, d\sigma = \int (-1) d\sigma = -(\text{area of triangle})$$

$$= -\tfrac{1}{2} \cdot 6 \cdot 4 = -12$$



Note: Unlike the divergence theorem, where n must be the outward normal of the surface enclosing volume τ, Stokes Theorem is valid for all surfaces bounded by C that have the same sense of concavity. In this case, the triangular area in the x, y-plane has no concavity but we choose $\mathbb{k}$ rather than $-\mathbb{k}$, since this is in the sense of curvature of the originally given surface.