(a) $\mathbf{r}(t) = \langle 5\sin t, 6t, 5\cos t\rangle \quad \Rightarrow$
$\mathbf{r}'(t) = \langle 5\cos t, 6, -5\sin t\rangle \quad \Rightarrow$
$|\mathbf{r}'(t)| = \sqrt{25\cos^2 t + 36 + 25\sin^2 t} = \sqrt{61}$. Then
$\mathbf{T}(t) = \dfrac{\mathbf{r}'(t)}{|\mathbf{r}'(t)|} = \frac{1}{\sqrt{61}}\langle 5\cos t, 6, -5\sin t\rangle$ or $\left\langle \frac{5}{\sqrt{61}}\cos t, \frac{6}{\sqrt{61}}, -\frac{5}{\sqrt{61}}\sin t\right\rangle$.
$\mathbf{T}'(t) = \frac{1}{\sqrt{61}}\langle -5\sin t, 0, -5\cos t\rangle \quad \Rightarrow$
$|\mathbf{T}'(t)| = \frac{1}{\sqrt{61}}\sqrt{25\sin^2 t + 0 + 25\cos^2 t} = \frac{5}{\sqrt{61}}$.
Thus $\mathbf{N}(t) = \dfrac{\mathbf{T}'(t)}{|\mathbf{T}'(t)|} = \dfrac{1/\sqrt{61}}{5/\sqrt{61}}\langle -5\sin t, 0, -5\cos t\rangle = \langle -\sin t, 0, -\cos t\rangle$.

(b) $\kappa(t) = \dfrac{|\mathbf{T}'(t)|}{|\mathbf{r}'(t)|} = \dfrac{5/\sqrt{61}}{\sqrt{61}} = 5/61$