$$\frac{\partial}{\partial x_{\mu}} \frac{\partial}{\partial x_{\mu}} \phi(\hat{x}) = g^{\nu} \frac{\partial}{\partial x^{\nu}} \frac{\partial}{\partial x^{\nu}} \phi(\hat{x}) = (4)$$

$$\frac{\partial}{\partial x_{\mu}} \phi(\hat{x}) = \frac{\partial}{\partial x^{\nu}} \phi(x^{\xi} \frac{\partial \hat{x}^{\xi}}{\partial x^{\xi}}) = \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}}$$

$$(\bullet) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta z}}{\partial x^{\varepsilon}} = g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \right) = g^{\mu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta z}}{\partial x^{\varepsilon}} = g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \right) = g^{\mu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta z}}{\partial x^{\varepsilon}} = g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta z}}{\partial x^{\varepsilon}} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta z}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \right) \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\nu}} \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{\chi} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{z} \right) = g^{\nu} \left(\partial_{\eta} \partial_{\eta} \phi(\hat{x}) \frac{\partial \hat{x}^{\eta}}{\partial x^{\varepsilon}} - g^{\nu} \wedge \hat{y}^{z} \right)$$