$$= \frac{2(1+(\xi^1)^4+(\xi^2)^4+2(\xi^2)+2(\xi^1)^2+2(\xi^1)^2(\xi^1)^2)}{(1+(\xi^1)^2+(\xi^2)^2)^2} = 2$$

$$\langle v_2, \partial n/\partial \xi^2 \rangle = (2\xi^1\xi^2, -(1+((\xi^1)^2-(\xi^2)^2), -2\xi^2)$$

$$\cdot \left(\frac{-4\xi^1\xi^2}{(1+(\xi^1)^2+(\xi^2)^2)^2}, \frac{2(1+(\xi^1)^2-(\xi^2)^2)}{(1+(\xi^1)^2+(\xi^2)^2)^2}, \frac{4\xi^2}{(1+(\xi^1)^2+(\xi^2)^2)^2} \right)$$

$$= \frac{(-8(\xi^1)^2(\xi^2)^2 - 2(1+(\xi^1)^2-(\xi^2)^2)^2 - 8(\xi^2)^2)}{(1+(\xi^1)^2+(\xi^2)^2)^2}$$

$$= \frac{-2(4(\xi^1)^2(\xi^2)^2 + 1 + (\xi^1)^4 + (\xi^2)^4 + 2(\xi^1)^2 - 2(\xi^2)^2 - 2(\xi^1)^2(\xi^2)^2 + 4(\xi^2)^2)}{(1+(\xi^1)^2+(\xi^2)^2)^2}$$

$$= \frac{-2(1+(\xi^1)^4+(\xi^2)^4+2(\xi^1)^2(\xi^2)+(\xi^1)^2+(\xi^2)^2)}{(1+(\xi^1)^2+(\xi^2)^2)^2} = -2$$

$$2-2=0$$

ie the trace of the Weingarten map, and the mean curvature is zero.

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Since I read this question I consulted Spivak. For a surface $f(s,t)$, on which a metric $(ds)^2 = E(d\xi^1)^2 + 2F\,d\xi^1 d\xi^2 + G(d\xi^2)^2$,

if $f_{11} = \frac{\partial^2 f}{\partial s^2}$, $f_{12} = \frac{\partial^2 f}{\partial s \partial t}$, $f_{22} = \frac{\partial^2 f}{\partial t^2}$

$l = \langle \underline{n}, f_{11} \rangle$, $m = \langle n, f_{12} \rangle$, $n = \langle \underline{n}, f_{22} \rangle$

The matrix of the Weingarten map is $\frac{1}{EG-F^2} \begin{bmatrix} G & -F \\ -F & E \end{bmatrix} \begin{bmatrix} l & -m \\ -m & n \end{bmatrix}$

In this case $E = G = (1+(\xi^1)^2+(\xi^2)^2)^2$

$F = 0$.

$f_{11} = (-2\xi^1, 2\xi^2, 2)$

$f_{12} = (2\xi^2, -2\xi^1, 0)$

$f_{22} = (2\xi^1, 2\xi^2, -2)$

$EG - F^2 = (1+(\xi^1)^2+(\xi^2)^2)^4$.