a) $x = 2/\sqrt{5}$ $y = 1/\sqrt{5}$ $z = \frac{\sqrt{5}}{\sqrt{5}} - \frac{2}{\sqrt{5}} + \frac{1}{\sqrt{5}} = \frac{\sqrt{5}-3}{\sqrt{5}}$

$f(2/\sqrt{5}, 1/\sqrt{5}, \frac{-3+\sqrt{5}}{\sqrt{5}}) = 3\left(\frac{2}{\sqrt{5}}\right) + 2\left(\frac{1}{\sqrt{5}}\right) + \frac{\sqrt{5}-3}{\sqrt{5}} = \frac{6}{\sqrt{5}} + \frac{2}{\sqrt{5}} + \frac{\sqrt{5}-3}{\sqrt{5}} = \frac{5+\sqrt{5}}{\sqrt{5}}$.

b) $x = 2/\sqrt{5}$ $y = -1/\sqrt{5}$ $z = \frac{\sqrt{5}}{\sqrt{5}} - \frac{2}{\sqrt{5}} + \frac{1}{\sqrt{5}} = \frac{\sqrt{5}-1}{\sqrt{5}}$

$f(2/\sqrt{5}, -1/\sqrt{5}, \frac{\sqrt{5}-1}{\sqrt{5}}) = 3\left(\frac{2}{\sqrt{5}}\right) + 2\left(-\frac{1}{\sqrt{5}}\right) + \frac{\sqrt{5}-1}{\sqrt{5}} = \frac{6}{\sqrt{5}} + \frac{2}{\sqrt{5}} + \frac{\sqrt{5}-1}{\sqrt{5}} = \frac{3+\sqrt{5}}{\sqrt{5}}$

c) $x = -2/\sqrt{5}$ $y = 1/\sqrt{5}$ $z = \frac{\sqrt{5}}{\sqrt{5}} + \frac{2}{\sqrt{5}} - \frac{1}{\sqrt{5}} = \frac{\sqrt{5}+1}{\sqrt{5}}$

$f(-2/\sqrt{5}, 1/\sqrt{5}, \frac{\sqrt{5}+1}{\sqrt{5}}) = 3\left(-\frac{2}{\sqrt{5}}\right) + 2\left(\frac{1}{\sqrt{5}}\right) + \frac{\sqrt{5}+1}{\sqrt{5}} = -\frac{6}{\sqrt{5}} + \frac{2}{\sqrt{5}} + \frac{\sqrt{5}+1}{\sqrt{5}} = \frac{\sqrt{5}-3}{\sqrt{5}}$

d) $x = -2/\sqrt{5}$ $y = -1/\sqrt{5}$ $z = \frac{\sqrt{5}}{\sqrt{5}} + \frac{2}{\sqrt{5}} + \frac{1}{\sqrt{5}} = \frac{\sqrt{5}+0}{\sqrt{5}}$

$f(-2/\sqrt{5}, 1/\sqrt{5}, \frac{\sqrt{5}+3}{\sqrt{5}}) = 3\left(-\frac{2}{\sqrt{5}}\right) + 2\left(\frac{-1}{\sqrt{5}}\right) + \frac{\sqrt{5}+3}{\sqrt{5}} = \frac{-6}{\sqrt{5}} + \frac{2}{\sqrt{5}} + \frac{\sqrt{5}+3}{\sqrt{5}} = \frac{\sqrt{5}-5}{\sqrt{5}}$

Maximo

$f(2/\sqrt{5}, 1/\sqrt{5}, \frac{3+\sqrt{5}}{\sqrt{5}}) = \frac{5+\sqrt{5}}{\sqrt{5}} = 3.23606$

Minimo

$f(-2/\sqrt{5}, -1/\sqrt{5}, \frac{\sqrt{5}+1}{\sqrt{5}}) = \frac{\sqrt{5}-5}{\sqrt{5}} = -1.23606$