$\psi_1(z) = 1$

$\psi_2(z) = -\dfrac{\sqrt{1+2\,z+\sqrt{-(-3+2\,z)\,(1+2\,z)\,(-5+8\,z)}}}{2\,\sqrt{2}\,z}$

$\psi_3(z) = \dfrac{-4+z}{3\,z}$