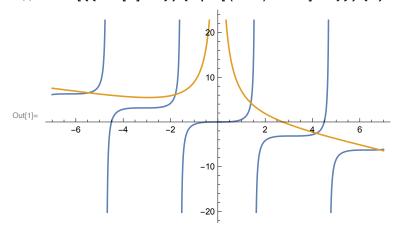
$ln[1] = Plot[{{Tan[z] - z}, {Sqrt[(8/z)^2 - 1] - z}}, {z, -7, 7}]$



■ We can use Desmos to find the intersections. The intersections correspond to a z-value, which corresponds to an energy eigenvalue. Since there are 5 intersections we know there will be 5 even eigenfunctions (we know they are even since we found them with the condition A=0).