

The exponent on a factor has a noticeable impact on the behavior at the root. If the exponent is larger than 1 then there is a horizontal tangent at the root; if it is less than one (but greater than 0) then there is a vertical tangent; if the exponent is 1 then the root is not a critical point. If the exponent (or its numerator) is even the function turns at the root which is a relative extrema. If the exponent is odd, the function changes sign at the root. We can test some of this with a few more examples:



Hmm, Mathematica makes some of the horizontal tangents hard to distinguish from corners....