$$x < y \implies x^{2n} = x\,x^{2n-1} < y\,x^{2n-1} = yx\,x^{2n-2} < yy\,x^{2n-2} = y^2\,x^{2n-2} = y^2 x\,x^{2n-3} < y^2 y\,x^{2n-3} = y^3\,x^{2n-3}$$