Intercepts of the Quadratic

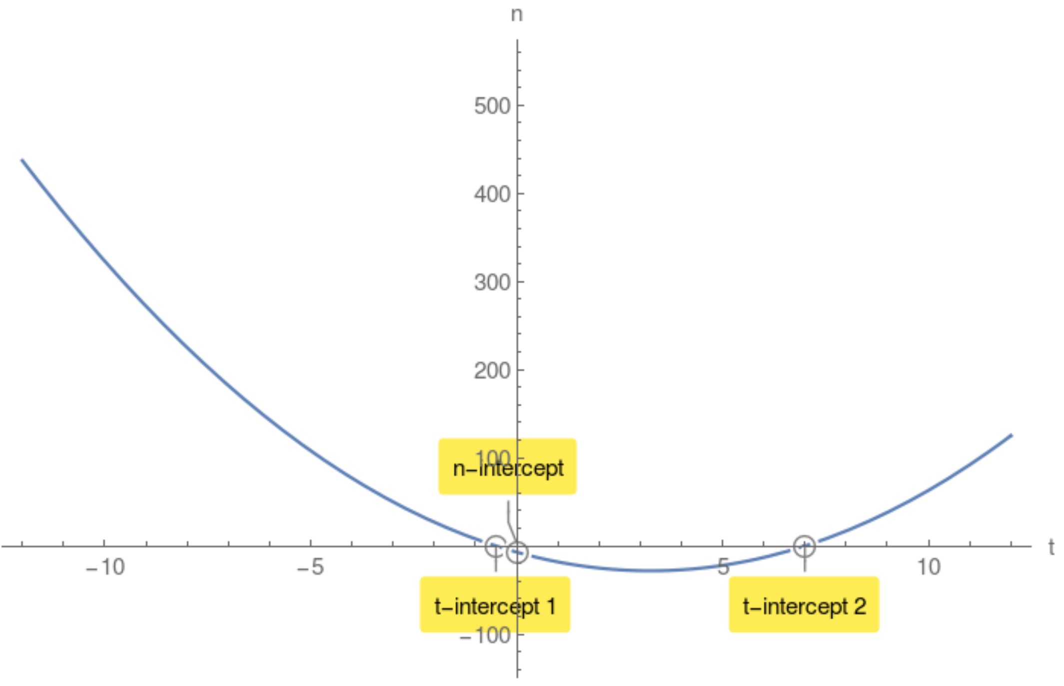
Given a quadratic $n(t)=a\,t^2+b\,t+c$ compute its discriminant $\triangle$:
$\triangle=\sqrt{b^2-4\,ac}$

Case1: $\triangle>0$

$t_{1,2}=\frac{-b\pm\sqrt{b^2-4\,ac}}{2a}$ computes the t-intercepts of multiplicity 1.
$n(0)=c$ computes the single n-intercept.

Example 1.

$n(t)=2\,t^2-13\,t-7$ compute its discriminant $\triangle$:
$\triangle=225>0$
$t_{1,2}=-\frac{1}{2},7$
$n(0)=-7$ n-intercept.

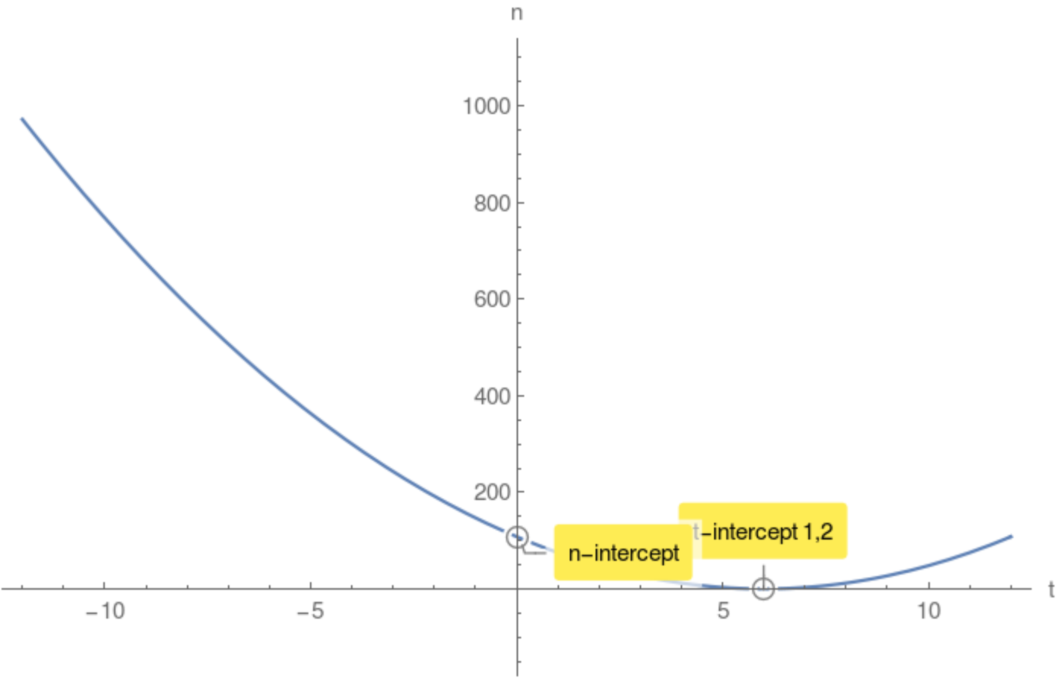


Case2: $\triangle=0$

$t_{1,2}=\frac{-b\pm\sqrt{b^2-4\,ac}}{2a}=\frac{-b\pm0}{2a}=\frac{-b}{2a}$ single t-intercept of multiplicity 2.

Example 2.

$n(t)=3\,t^2-36\,t+108$ compute its discriminant $\triangle$:
$\triangle=0$
$t_{1,2}=6,6$
$n(0)=108$ n-intercept.



Case3: $\triangle<0$

$\sqrt{b^2-4\,ac}$ has no value in Real Numbers. Therefore there are no t-intercepts.
However there is a n-intercept.

Example 3.

$n(t)=9\,t^2-126\,t+490$ compute its discriminant $\triangle$:
$\triangle=-1764<0$
$n(0)=490$ n-intercept.