Hello!
Here is some math.

$$\alpha\beta\gamma\delta\Gamma\Delta\Lambda\Theta abcdABCD$$

Now here are some symbols.

$$\int_{-\infty}^{\infty}\sin\theta = \sqrt{\frac{e^{i\pi}}{\sum_{i=0}\epsilon\Gamma\Lambda\cdot i}}$$

Here is a compatibility test. Lowercase letters:

$$\alpha a\beta b\gamma y\delta d\epsilon e\varepsilon\eta n\theta o\iota i\kappa k\lambda l\ell\mu u\nu v\rho p\sigma o\tau t\upsilon v\phi o\chi x\omega w$$

Uppercase letters:

$$\Gamma\mathrm{F}\Delta\mathrm{A}\Theta\mathrm{O}\Lambda\mathrm{AT}\Xi\mathrm{E}\Sigma\mathrm{X}\Upsilon\mathrm{Y}\ \mathrm{O}\Phi\mathrm{I}\Psi\mathrm{U}\Omega\mathrm{O}$$

Large symbols, text-size:

$$\textstyle [(\langle\{\int S\sum E\}\rangle)]$$

Display style:

$$\left[\left(\left\langle\left\{\int S\sum E\right\}\right\rangle\right)\right]$$

Common math symbols:

$$a+\frac{2}{\pi}\neq 15\Longrightarrow A\in\Pi,\forall A\approx\nabla.$$

Unbound Orbits: Deflection of Light by the Sun

Consider a particle or photon approaching the sun from very great distances. At infinity the metric is Minkowskian, that is, $A(\infty) = B(\infty) = 1$, and we expect motion on a straight line at constant velocity V

$$b \simeq r\sin(\phi - \phi_\infty) \simeq r(\phi - \phi_\infty)$$
$$-V \simeq \frac{d}{dt}(r\cos(\phi - \phi_\infty)) \simeq \frac{dr}{dt}$$

where b is the "impact parameter" and ϕ_∞ is the incident direction. We see that they do satisfy the equations of motion at infinity, where $A = B = 1$, and that the constants of motion are:

$$J = bV^2 \tag{1}$$
$$E = 1 - V^2 \tag{2}$$

(Of course a photon has $V = 1$, and as we have already seen, this gives $E = 0$.) It is often more convenient to express J in terms of the distance r_0 of closest approach to the sun, rather than the impact parameter b. At r_0, $dr/d\phi$ vanishes, so our earlier equations give:

$$J = r_0\left(\frac{1}{B(r_0)} - 1 + V^2\right)^{1/2}$$

The orbit is then described by

$$\phi(r) = \phi_\infty + \int_r^\infty \left\{ \frac{A^{\frac{1}{2}}(r)dr}{r^2\left(\frac{1}{{r_0}^2}\left[\frac{1}{B(r)-1+V^2}\right]\left[\frac{1}{B(r)-1+V^2}\right]^{-1} - \frac{1}{r^2}\right)^{\frac{1}{2}}} \right\}.$$

The total change in ϕ as r decreases from infinity to its minimum value r_0 and then increases again to infinity is just twice its change from ∞ to r_0, that is, $2|\phi(r0) -]\phi'_\infty|$. If the trajectory were a straight line, this would equal just π;

$$\Delta\phi = 2|\phi(r_0) - \phi_\infty| - \pi.$$

If this is positive, then the angle ϕ changes by more than 180°, that is, the trajectory is bent *toward* the sun; if $\Delta\phi$ is negative then the trajectory is bent away from the sun.

The end.