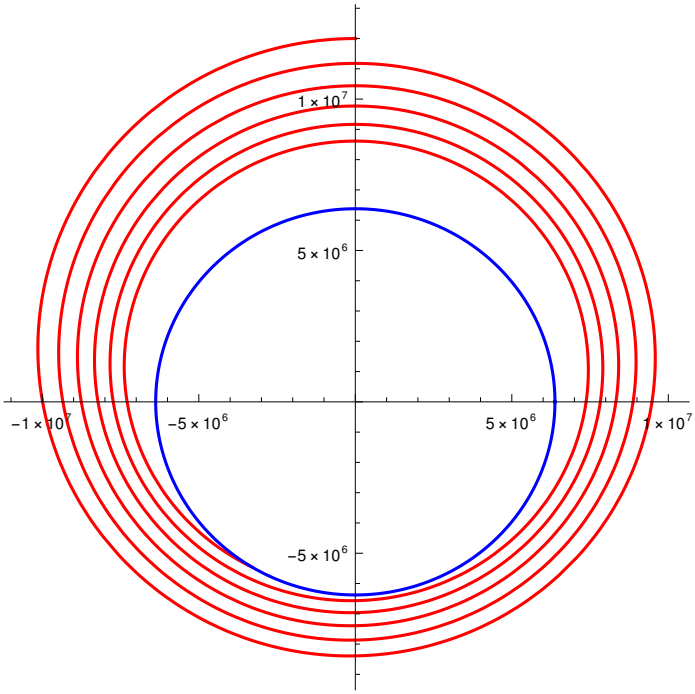
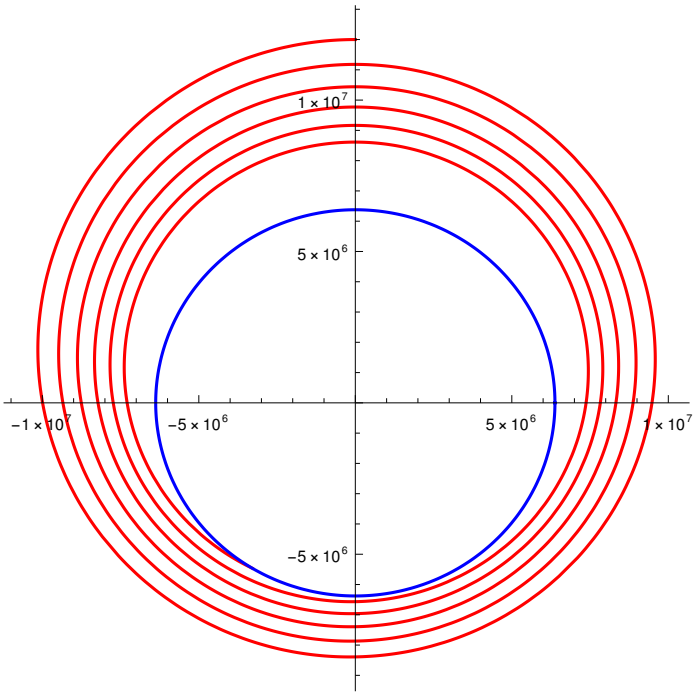
```
In[ ]:= G = 6.67 × 10^-11 ;                (*gravitational constant*)
        M = 5.97219 × 10^24 ;              (*mass of earth in kilograms*)
        r0 = 12 000 × 10^3 ;
        (*initial distance of the satellite from the centre of the Earth in metres*)
        v0KmpHr = 19 000;
        (*initial speed of the satellite in km/hr fired horizontally*)
        v0Mps = v0KmpHr 5/18 ;
        (*initial speed of the satellite in m/s fired horizontally*)
        phid0 = v0Mps/r0;
        RE = 6378 × 1000 ;                 (*radius of the Earth*)
        airDrag = 34 ;                     (*amount of air drag*)
        tFin = 140 000 ;                   (*how much time is to be simulated*)

        StopCriterion =   {WhenEvent[ {r[t] < RE || t > tFin} , end = t;
             "StopIntegration "]};
        sol = NDSolve[{r[t] × phi''[t] + 2 r'[t] × phi'[t] == 0 - airDrag phi'[t] ,
              r''[t] - r[t] phi'[t]^2 == -(G M)/r[t]^2 , r[0] == r0, phi[0] == π/2 , r'[0] == 0,
              phi'[0] == phid0, StopCriterion}, {r, phi}, {t, ∞}] // Quiet ;

        p1 = ParametricPlot [Evaluate [{r[t] Cos[phi[t]], r[t] Sin[phi[t]]} /. sol],
           {t, 0, end}, AspectRatio → 1, PlotStyle → Red, PlotRange → Full] ;
        p2 = ParametricPlot [{ RE Cos[u], RE Sin[u]}, {u, 0, 2 Pi},
           PlotStyle → Blue, PlotRange → Full] ;
        Show[p1, p2]
        Show[p1, p2, PlotRange → All]
```

Out[ ]=



Out[ ]=



In[ ]:=

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