```
In[28]:= x[s_] := ax s^3 + bx s^2 + cx s + dx
         y[s_] := ay s^3 + by s^2 + cy s + dy

In[30]:= r[s_] := {x[s], y[s]}

In[31]:= rp[s_] := D[r[s], s]
         rpp[s_] := D[rp[s], s]

In[33]:= f[s_] := Sqrt[D[x[s], s] * D[x[s], s] + D[y[s], s] * D[y[s], s]]

In[34]:= radiusOfCurvature[s_] := (f[s]^3) / (Sqrt[(rpp[s].rpp[s]) * (f[s]^2) - (rp[s].rpp[s])^2])

In[36]:= radiusOfCurvature[s] //.
          {2 bx + 6 ax s → px, 2 by + 6 ay s → py, cx + 2 bx s + 3 ax s^2 → qx, cy + 2 by s + 3 ay s^2 → qy}
```

Out[36]=

$$\frac{\left(qx^2+qy^2\right)^{3/2}}{\sqrt{-(px\,qx+py\,qy)^2+\left(px^2+py^2\right)\left(qx^2+qy^2\right)}}$$