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In[166]:= n=.; l=.; m=.; x=.; r=.;  $\theta$ =.;  $\phi$ =.;
 $\psi_{n,l,m}[r_, \theta_, \phi_] := R_{nl}[r] * Y_{lm}[\theta, \phi];$ 
 $R_{n,l}[r_] := a^{(-3/2)} * 2 / n^2 * \text{Sqrt}[(n-l-1)! / ((n+l)!)^3] * F_{nl}[2 * r / (n * a)];$ 
 $F_{n,l}[x_] := x^l * \text{Exp}[-x/2] * (n+l)! \text{LaguerreL}[n-l-1, 2 * l+1, x];$ 
 $Y_{l,m}[\theta_, \phi_] := \text{SphericalHarmonicY}[l, m, \theta, \phi];$ 

PreHydrogenRadialPlot[n_, l_] :=
  Plot[Rnl[r] /. {a → 1}, {r, 0, 10 * (2 * n + 1) / 1.5}, PlotRange → All, Frame → True]
GetCoordsx[n_, l_] := AbsoluteOptions[PreHydrogenRadialPlot[n, l], PlotRange][[1, 2]][[1, 2]]
GetCoordsy[n_, l_] := AbsoluteOptions[PreHydrogenRadialPlot[n, l], PlotRange][[1, 2]][[2, 2]]

In[177]:= Rad[n_, l_] := Framed[Rnl[r]];

HydrogenRadialPlot[n_, l_, m_] := Plot[Rnl[r] /. {a → 1}, {r, 0, 10 * (2 * n + 1) / 1.5},
  PlotRange → All, PlotPoints → 100, PlotLabel → {n, l, m}, PlotStyle → {Black, Thick},
  Epilog → Inset[Rad[n, l], {GetCoordsx[n, l], GetCoordsy[n, l]}],
  Frame → True, FrameTicks → None, FrameLabel → {"r", "Rnl[r]"}]

In[179]:= HydrogenRadialPlot[1, 0, 0]

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Out[179]=

