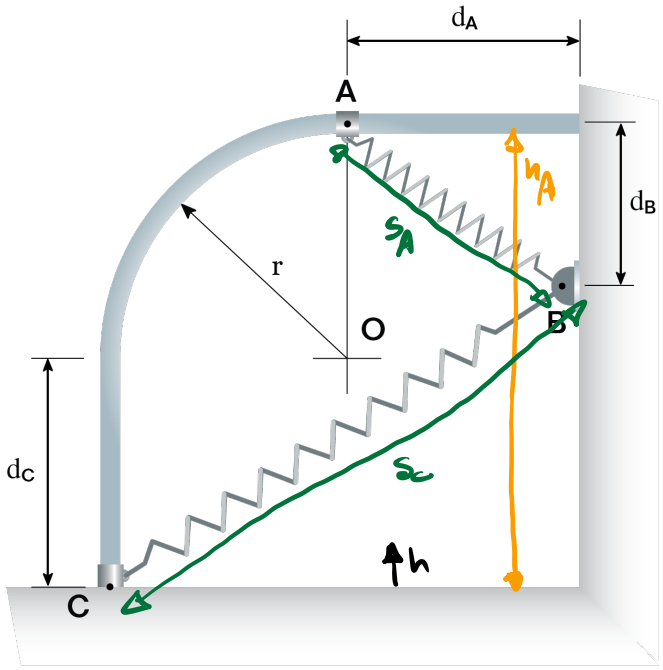
Find the potential energy at point A and at point C. Determine which location has greater potential energy. The collar has mass $m = 0.8kg$ and the spring has a constant $k = 600\ N/m$. Point A is located a horizontal distance of $d_A = 0.6m$ away from the wall while point C is located a vertical distance of $d_C = 1.3\ m$ below point O on the diagram. Point B is located a vertical distance $d_B = 0.9\ m$ below point A and the track has a radius $r = 0.2\ m$. The unstretched length of the spring is $l_0 = 0.12\ m$.



(A) $V_A = mgh_A + \frac{1}{2}ks_A^2 = mg(d_C + r) + \frac{1}{2}k\left(\sqrt{d_A^2 + d_B^2} - l_0\right)^2$

$= (0.8\,kg)(9.81\,m/s^2)(1.3\,m + 0.2\,m) + \frac{1}{2}\left(600\,\frac{N}{m}\right)\left(\sqrt{0.6m^2 + 0.9m^2} - 0.12m\right)^2$

$\boxed{V_A = 289.2\,J}$

(C) $V_C = mgh_C^{\,0} + \frac{1}{2}ks_C^2 = 0 + \frac{1}{2}k\left(\sqrt{(d_A + r)^2 + (d_C + r - d_B)^2} - l_0\right)^2$

$= \frac{1}{2}\left(600\,\frac{N}{m}\right)\left(\sqrt{(0.6m + 0.2m)^2 + (1.3m + 0.2m - 0.9m)^2} - 0.12m\right)^2$

$U_C = 232.3\ J$

$U_A > U_C$