**2** A particle $P$ of mass $m$ is attached to one end of a light inextensible string of length $a$. The other end of the string is attached to a fixed point $O$. The particle $P$ is held at the point $A$ with the string taut. It is given that $OA$ makes an angle $\theta$ with the downward vertical through $O$, where $\tan\theta = \frac{3}{4}$. The particle $P$ is projected perpendicular to $OA$ in an upwards direction with speed $\sqrt{5ag}$, and it starts to move along a circular path in a vertical plane. When $P$ is at the point $B$, where angle $AOB$ is a right angle, the tension in the string is $T$.

Find $T$ in terms of $m$ and $g$. [5]