

6. We use Eq. 7-12 for W_g and Eq. 8-9 for U .

- (a) The displacement between the initial point and Q has a vertical component of $h - R$ downward (same direction as \vec{F}_g), so (with $h = 5R$) we obtain $W_g = \vec{F}_g \cdot \vec{d} = 4mgR$.
- (b) The displacement between the initial point and the top of the loop has a vertical component of $h - 2R$ downward (same direction as \vec{F}_g), so (with $h = 5R$) we obtain $W_g = \vec{F}_g \cdot \vec{d} = 3mgR$.
- (c) With $y = h = 5R$, we find $U = 5mgR$ at P .
- (d) With $y = R$, we find $U = mgR$ at Q .
- (e) With $y = 2R$, we find $U = 2mgR$ at the top of the loop.
- (f) The new information ($v_i \neq 0$) is not involved in any of the preceding computations; the above results are unchanged.