Question#19151

An 80 kg man climbs a 50 m-high hill in 20 minutes. What is the average power in watts he expends climbing the hill?

Solution:

Let:

$m = 50\ kg$

$H = 50\ m$

$t = 20\ min = 1200\ sec$

$W - ?$

$\boldsymbol{W = \frac{A}{t}}$, were A- the done work

Such as the done work is equal to change a potential energy:

$A = \Delta E_p = mgH$, g=9,8 m/s^2

$$\boldsymbol{W = \frac{mgH}{t}}$$

$$\boldsymbol{W = \frac{50*9.8*50}{1200} = 20.42\ watt}$$

Answer: 20,42 watt.