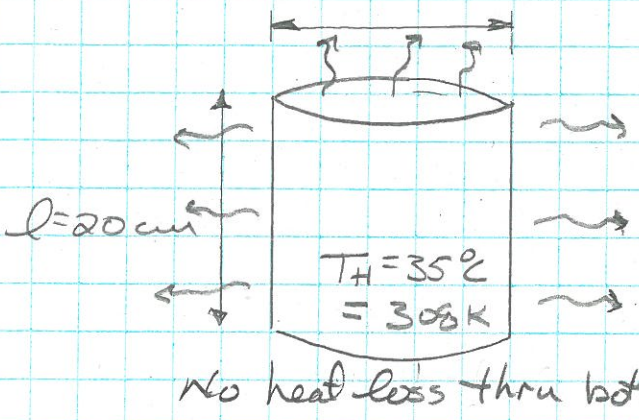

the net radiation energy in (i.e. emitted − absorbed):

$$\frac{Q}{\Delta t} = e\sigma A(T_H^4 - T_0^4)$$ assume no heat loss thru bottom.

$$A = 2\pi r\ell + \pi r^2 = 0.1571\ m^2$$

$$\sigma = 5.67\times10^{-8}\ \frac{W}{m^2K^4}$$

So:

$$\frac{Q}{\Delta t} = \underline{25.61\ W}$$

What is this reduced to if the person wears a hat covering the top of the head?

Now, $A_{new} = 2\pi r\ell = 0.1257\ m^2$

$$\frac{Q}{\Delta t} = e\sigma A_{new}(T_H^4 - T_0^4) = \underline{20.49\ W}$$ about a 20% reduction.

That's why my Grandma always told me to wear a hat!