Week 3 submission

1.

$Q = (T_1 - T_2)/R_{total}$; $R_{total} = 6{,}81$ °C/W

$Q = 30/6{,}81$

$Q = 4{,}4052$ w

with 32 cm of thickness of the brick

$R_i = 1/(10*0{,}25) = 0{,}4$ °C/W

$R_f = 0{,}03/(0{,}026*0{,}25) = 4{,}615$ °C/W

$R_{pc1} = R_{pc2} = 0{,}16/(0{,}72*0{,}22) = 48{,}48$ °C/W

$R_b = 0{,}32/(0{,}72*0{,}22) = 2{,}02$ °C/W

$R_{plaster1} = R_{plaster2} = 0{,}3636$

$R_2 = 0{,}16$

$1/R_{total} = 1/R_b + 1/R_{pc1} + 1/R_{pc2} = 1/(2{,}02) + 2*(1/48{,}48) = 0{,}4950+0{,}0412 = 0{,}5362$

$R_{totalp} = 1{,}8649$ °C/W

$R_{total} = R_{totalp} + 2*R_{plaster}+R_2 = 1{,}8649 + 2*0{,}3636+0{,}16 = 2{,}7521$ °C/W

$Q = (T_1-T_2)/R_{total} = 30/2{,}7521 = 10{,}9$ W

The heat transfer rate increases.

2.

R'withwood = 0,03+0,14+0,62+0,63+0,079+0,12 = 1,619

R'withins = 0,03+0,14+0,079+0,12 =