Math 327, Fall 2019, Chapter 2, Data from Appendix B, Table B.2

Data was collected during a solar energy project at Georgia Tech. The following output is from fitting a linear regression model that relates total heat flux (y, kilowatts) to radial deflection of the deflected rays (x4, milliradians).

```
lm(formula = y ~ x4, data = mydata)

Residuals:
     Min       1Q   Median       3Q      Max
-26.2487  -4.5029   0.5202   7.9093  24.5080

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  607.103     42.906  14.150 5.24e-14 ***
x4           -21.402      2.565  -8.343 5.94e-09 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1
' ' 1

Residual standard error: 12.33 on 27 degrees of freedom
Multiple R-squared:  0.7205,   Adjusted R-squared:  0.7102
F-statistic: 69.61 on 1 and 27 DF,  p-value: 5.935e-09

> anova (myfit)
Analysis of Variance Table

Response: y
          Df  Sum Sq Mean Sq F value    Pr(>F)
x4         1 10578.7   10579  69.609 5.935e-09 ***
Residuals 27  4103.2     152
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1
' ' 1
> confint (myfit)
                2.5 %   97.5 %
(Intercept) 519.06725 695.1393
x4          -26.66592 -16.1390
```

$\hat{\beta}_0 =$__________, $se(\hat{\beta}_0) =$__________, $\frac{\hat{\beta}_0}{se(\hat{\beta}_0)} =$__________

$\hat{\beta}_0$ units: __________

$\hat{\beta}_1 =$__________, $se(\hat{\beta}_1) =$__________, $\frac{\hat{\beta}_1}{se(\hat{\beta}_1)} =$__________

$\hat{\beta}_1$ units: __________

$\hat{\sigma} =$__________, $R^2 =$__________

F-statistic and p-value = __________, __________

Model degrees of freedom = __________

Residual degrees of freedom = __________

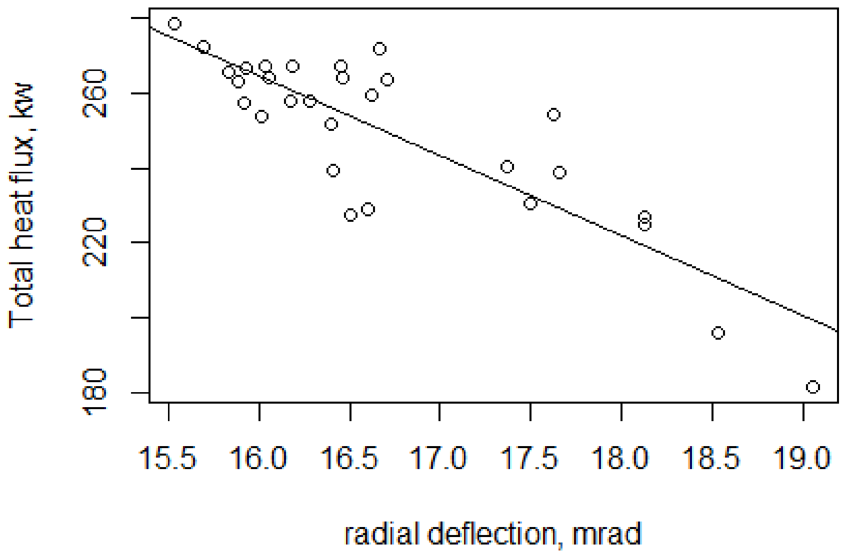
Regression sum of squares, $\hat{\beta}_1 SS_{xy} =$ __________

Residual sum of squares, $SS_{res} =$ __________

Mean Square Error, $MS_{res} =$__________

$\hat{\beta}_0$ 95% confidence limits: __________

$\hat{\beta}_1$ 95% confidence limits: __________


Total heat flux, kw
180
220
260
15.5
16.0
16.5
17.0
17.5
18.0
18.5
19.0
radial deflection, mrad