Math 327, Fall 2019, Chapter 2, Homework Question #1

The weight and systolic blood pressure were measured on 26 randomly selected subjects in the age range, 25-30 years old. Systolic blood pressure (in mmHg) was modeled as a linear function of weight (in lbs). Using the R output below fill in the values for the statistics listed. Round to three significant figures.

```
lm(formula = sys.bp ~ weight, data = mydata)

Residuals:
    Min      1Q  Median      3Q     Max
-17.182  -6.485  -2.519   8.926  12.143

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 69.10437   12.91013   5.353 1.71e-05 ***
weight       0.41942    0.07015   5.979 3.59e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1
' ' 1

Residual standard error: 8.681 on 24 degrees of freedom
Multiple R-squared:  0.5983,   Adjusted R-squared:  0.5815
F-statistic: 35.74 on 1 and 24 DF,  p-value: 3.591e-06

> anova (myfit)
Analysis of Variance Table

Response: sys.bp
          Df Sum Sq Mean Sq F value    Pr(>F)
weight     1 2693.6 2693.58  35.744 3.591e-06 ***
Residuals 24 1808.6   75.36
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1
' ' 1
> confint (myfit)
                2.5 %     97.5 %
(Intercept) 42.4591756 95.7495700
weight       0.2746281  0.5642023
```

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

$\hat{\beta}_0$ 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 = _____

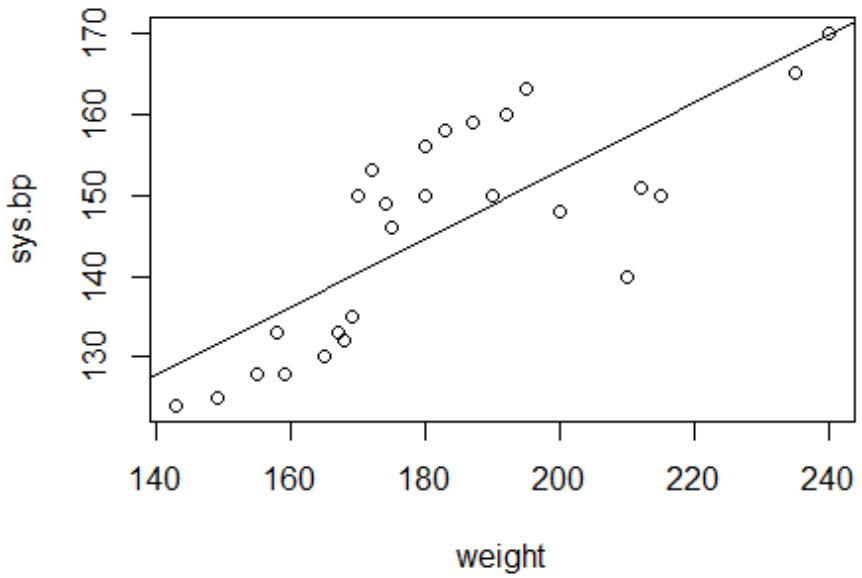
Regression sum of squares, $\hat{\beta}_1 SS_{xy} =$ _____

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

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

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

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


sys.bp
130
140
150
160
170
140
160
180
200
220
240
weight