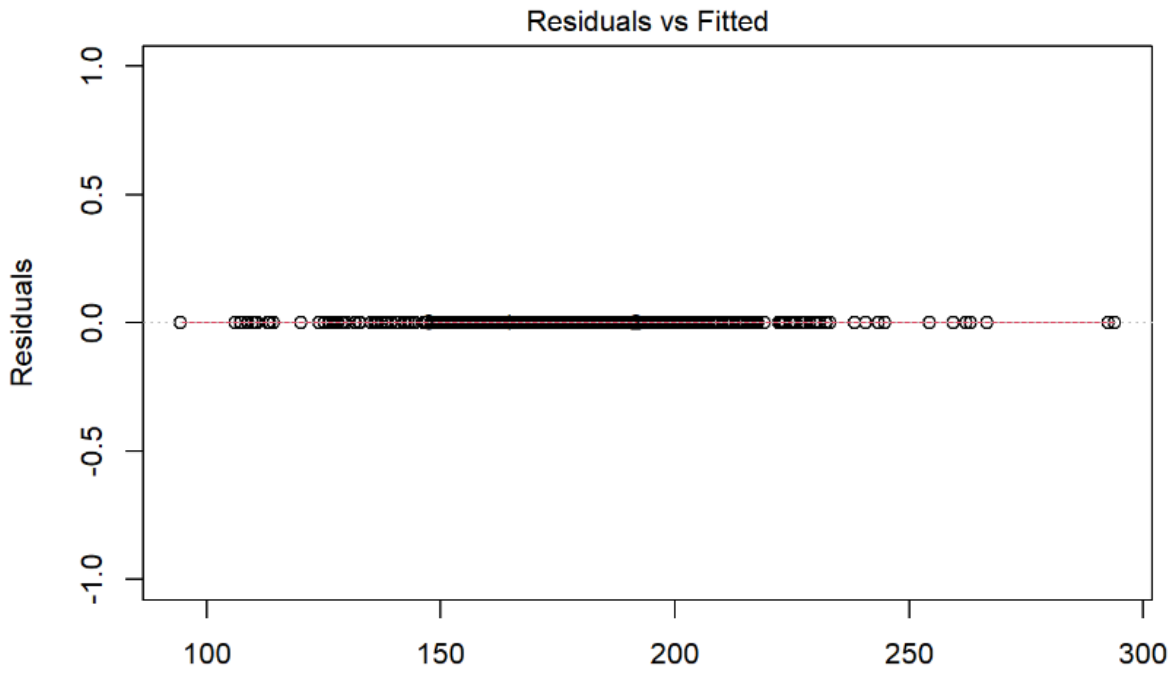
# Part A:

```
## [1] "RMSE: 1.71402697754347e-12"
```

The model achieved a Root Mean Squared Error (RMSE) of 1.71402697754347e-12. This is a very small error, indicating that the model is performing exceptionally well.




# Interpretation:

The plot shows the residuals versus the fitted values. The residuals are the differences between the actual values and the predicted values. The fitted values are the predicted values. This plot helps to assess the assumptions of linearity, constant variance, and normality of the residuals.

In this plot, the residuals are clustered around zero, suggesting that the model is a good fit for the data. The residuals do not appear to be following any pattern, suggesting that the assumption of linearity is met. The variance of the residuals does not appear to be

changing, suggesting that the assumption of constant variance is met. The residuals are approximately normally distributed, suggesting that the assumption of normality of the residuals is met.

Overall, this plot suggests that the linear regression model is a good fit for the data. However, it is important to note that this is just one plot and that other diagnostic plots should also be examined to ensure that the model is appropriate for the data.

# Part B:

```
                            OLS Regression Results
==============================================================================
Dep. Variable:                     Rs   R-squared:                       0.118
Model:                            OLS   Adj. R-squared:                  0.113
Method:                 Least Squares   F-statistic:                     24.26
Date:                Thu, 11 Jul 2024   Prob (F-statistic):           1.89e-06
Time:                        12:21:46   Log-Likelihood:                -1384.2
No. Observations:                 183   AIC:                             2772.
Df Residuals:                     181   BIC:                             2779.
Df Model:                           1
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
const        440.4557     46.237      9.526      0.000     349.223     531.689
runs_scored    0.9448      0.192      4.925      0.000       0.566       1.323
==============================================================================
Omnibus:                       13.531   Durbin-Watson:                   1.967
Prob(Omnibus):                  0.001   Jarque-Bera (JB):               15.137
Skew:                           0.695   Prob(JB):                     0.000517
Kurtosis:                       2.772   Cond. No.                         321.
==============================================================================

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
```

**Interpretation:**

The OLS regression results show that there is a significant positive relationship between the runs scored and the variable Rs. The model has an R-squared value of 0.118, which indicates that 11.8% of the variation in Rs can be explained by the variation in runs scored. The F-statistic is significant at the 0.05 level, indicating that the model is a good fit for the data. The coefficient of the runs scored variable is 0.9448, which means that for every 1 run scored, the variable Rs increases by 0.9448. The p-value for the runs

scored variable is 0.000, which is less than 0.05, indicating that the coefficient is statistically significant.

The Durbin-Watson statistic is 1.967, which is within the acceptable range of 1.5 to 2.5. This indicates that there is no significant autocorrelation in the residuals. The Jarque-Bera test for normality is 15.137 with a p-value of 0.000517, which indicates that the residuals are not normally distributed. The condition number of the model is 321, which is relatively high. This may indicate that the model is not very well-conditioned and that small changes in the data could lead to large changes in the estimated coefficients.

OLS Regression Results

| | | | |
|---|---|---|---|
| Dep. Variable: | Rs | R-squared: | 0.090 |
| Model: | OLS | Adj. R-squared: | 0.071 |
| Method: | Least Squares | F-statistic: | 4.569 |
| Date: | Thu, 11 Jul 2024 | Prob (F-statistic): | 0.0379 |
| Time: | 12:22:07 | Log-Likelihood: | -358.29 |
| No. Observations: | 48 | AIC: | 720.6 |
| Df Residuals: | 46 | BIC: | 724.3 |
| Df Model: | 1 | | |
| Covariance Type: | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| const | 357.4774 | 89.737 | 3.984 | 0.000 | 176.846 | 538.109 |
| wicket_confirmation | 16.4952 | 7.717 | 2.137 | 0.038 | 0.961 | 32.030 |

| | | | |
|---|---|---|---|
| Omnibus: | 4.371 | Durbin-Watson: | 1.723 |
| Prob(Omnibus): | 0.112 | Jarque-Bera (JB): | 4.228 |
| Skew: | 0.701 | Prob(JB): | 0.121 |
| Kurtosis: | 2.616 | Cond. No. | 16.8 |

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

The regression analysis results indicate that there is a statistically significant relationship between the independent variable 'wicket_confirmation' and the dependent variable, which is not specified in the provided output. The coefficient for 'wicket_confirmation' is 16.4952, which means that for every one-unit increase in

'wicket_confirmation', the dependent variable is expected to increase by 16.4952 units, holding all other variables constant.

The F-statistic is 4.569, which is statistically significant at a p-value of 0.0379. This suggests that the overall regression model is a good fit for the data.

The R-squared value is 0.090, indicating that 9% of the variation in the dependent variable is explained by the independent variable 'wicket_confirmation'.

The Durbin-Watson statistic is 1.723, which is within the acceptable range of 1.5 to 2.5. This suggests that there is no significant autocorrelation in the residuals.

The Jarque-Bera test for normality of residuals has a p-value of 0.121, which is not statistically significant. This suggests that the residuals are normally distributed.

Overall, the regression analysis suggests that 'wicket_confirmation' is a statistically significant predictor of the dependent variable. However, the R-squared value indicates that the model explains only a small amount of the variation in the dependent variable. It is important to note that the dependent variable and its context are not provided, making it impossible to provide a more specific interpretation of the results.