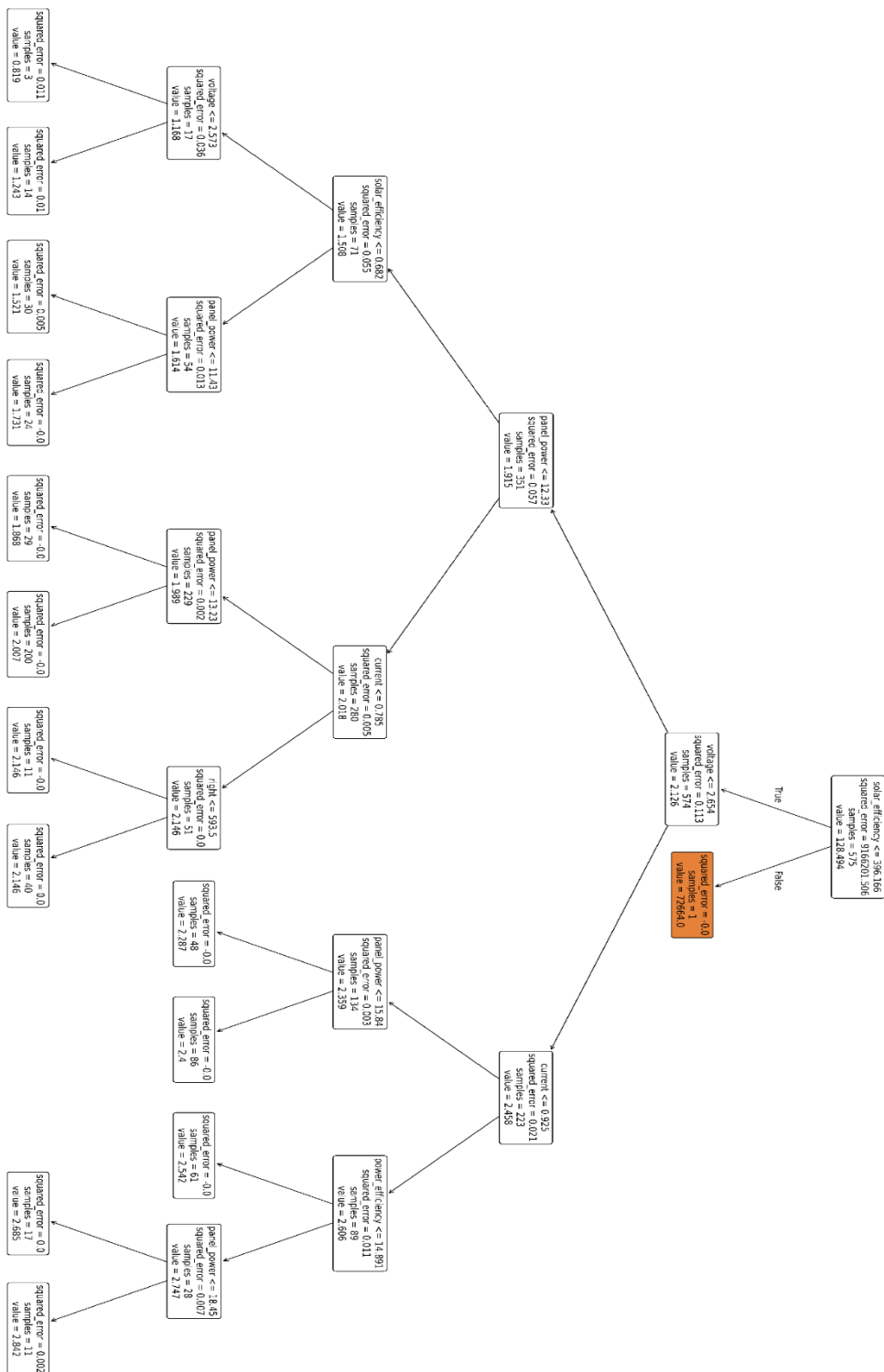


LAMPIRAN

Visualisasi Decision Tree



Gambar L1. Visualisasi Decision Tree

Lampiran kode program Exploratory Data Analysis (EDA):

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

df = pd.read_csv("data_kaggle.csv")

df['time'] = pd.to_datetime(df['time'], format='%H:%M', errors='coerce')
df['hour'] = df['time'].dt.hour + df['time'].dt.minute / 60

if 'time' in df.columns:
    df.drop(columns=['time'], inplace=True)
if 'panel_voltage' in df.columns and df['panel_voltage'].nunique() == 1:
    df.drop(columns=['panel_voltage'], inplace=True)

for col in df.columns:
    if df[col].dtype == 'object':
        df[col] = pd.to_numeric(df[col], errors='coerce')

print(df.info())

print("\n📊 Statistik Deskriptif:")
print(df.describe())

print("\n🔍 Missing Values:")
print(df.isnull().sum())

num_cols = df.select_dtypes(include=['int64', 'float64']).columns

for col in num_cols:
    plt.figure(figsize=(8, 4))
    sns.histplot(df[col], kde=True, bins=30, color='teal')
    plt.title(f'Distribusi: {col}', fontsize=12)
    plt.xlabel(col)
    plt.ylabel("Frekuensi")
    plt.tight_layout()
    plt.show()

for col in num_cols:
    plt.figure(figsize=(8, 4))
    sns.boxplot(x=df[col], color='goldenrod')
    plt.title(f'Boxplot: {col}', fontsize=12)
    plt.tight_layout()
    plt.show()

plt.figure(figsize=(10, 8))
sns.heatmap(df[num_cols].corr(), annot=True, fmt=".2f", cmap="coolwarm")
plt.title("Heatmap Korelasi Antar Fitur Numerik")
plt.tight_layout()
plt.show()
```

Lampiran kode program Python Pemodelan Decision Tree:

```

import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeRegressor, plot_tree
from sklearn.metrics import mean_squared_error, r2_score
import matplotlib.pyplot as plt

df = pd.read_csv("data_kaggle.csv")

df['time'] = pd.to_datetime(df['time'], format='%H:%M', errors='coerce')
df['hour'] = df['time'].dt.hour + df['time'].dt.minute / 60
df = df.drop(columns=['time', 'panel_voltage'])

for col in df.select_dtypes(include='object').columns:
    df[col] = pd.to_numeric(df[col], errors='coerce')

X = df.drop(columns=['power']) y = df['power'] X_train, X_test, y_train, y_test =
train_test_split(X, y, test_size=0.2, random_state=42)

model = DecisionTreeRegressor(random_state=42, max_depth=5)
model.fit(X_train, y_train)

y_pred = model.predict(X_test)

mse = mean_squared_error(y_test, y_pred)
rmse = np.sqrt(mse)
r2 = r2_score(y_test, y_pred)

print("📊 Evaluasi Model Decision Tree:")
print(f"R-squared (R²): {r2:.4f}")
print(f"Mean Squared Error (MSE): {mse:.4f}")
print(f"Root Mean Squared Error (RMSE): {rmse:.4f}")

plt.figure(figsize=(20, 8))
plot_tree(model, feature_names=X.columns, filled=True, fontsize=10)
plt.title("Visualisasi Decision Tree")
plt.show()

```

Tabel Lengkap Data Penelitian:

Atas	Kiri	Tengah	Bawah	Kanan	Arus	Waktu	Tegangan	Daya	Tegangan Panel	Daya Panel	Efisiensi Daya	Efisiensi Sur
581	581	628	679	549	0.46	7:00	2.5851	1.18915	18	8.28	14.3616667	0.58681786
580	580	628	679	549	0.51	7:15	2.59435	1.32312	18	9.18	14.4130556	0.65060241
577	577	628	679	548	0.56	7:30	2.6036	1.45802	18	10.08	14.4644444	0.71438696
575	575	628	679	548	0.46	7:45	2.5851	1.18915	18	8.28	14.3616667	0.58681786
572	572	628	679	548	0.42	8:00	2.5777	1.08263	18	7.56	14.3205556	0.53579022
572	570	628	679	549	0.42	8:15	2.5777	1.08263	18	7.56	14.3205556	0.53579022
569	569	629	679	550	0.61	8:30	2.61285	1.59384	18	10.98	14.5158333	0.77817151
567	567	629	679	549	0.56	8:45	2.6036	1.45802	18	10.08	14.4644444	0.71438696
565	565	628	680	548	0.61	9:00	2.61285	1.59384	18	10.98	14.5158333	0.77817151
565	564	628	679	549	0.56	9:15	2.6036	1.45802	18	10.08	14.4644444	0.71438696
563	563	628	679	548	0.66	9:30	2.6221	1.73059	18	11.88	14.5672222	0.84195606

562	562	628	679	546	0.56	9:45	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
562	562	628	679	546	0.42	10:00	2.5777	1.0826 3	18	7.56	14.32055 56	0.535790 22
563	563	628	679	547	0.61	10:15	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
563	563	628	679	547	0.37	10:30	2.5684 5	0.9503 3	18	6.66	14.26916 67	0.472005 67
570	571	643	693	559	0.51	10:45	2.5943 5	1.3231 2	18	9.18	14.41305 56	0.650602 41
563	563	629	679	548	0.61	11:00	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
612	612	640	681	597	0.76	11:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
612	612	639	680	597	0.71	11:30	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
622	622	650	692	608	0.66	11:45	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
612	612	639	680	598	0.71	12:00	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
612	612	640	681	598	0.86	12:15	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
612	612	639	680	598	0.56	12:30	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
612	612	639	680	598	0.76	12:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
612	612	640	680	598	0.71	13:00	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61

612	612	639	680	598	0.81	13:15	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
612	613	640	681	599	0.81	13:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
613	612	639	680	599	0.61	13:45	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
612	612	639	680	598	0.76	14:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
612	612	639	680	599	0.66	14:15	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
614	612	640	680	599	0.61	14:30	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
612	612	640	681	599	0.71	14:45	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
615	612	639	680	599	0.81	15:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
612	612	639	681	599	0.61	15:15	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
612	612	640	680	599	0.66	15:30	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
626	626	654	696	613	0.66	15:45	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
613	612	640	681	599	0.61	16:00	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
624	624	652	693	609	0.61	16:15	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
612	612	640	680	598	0.66	16:30	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06

613	613	640	681	598	0.71	16:45	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
613	612	640	680	598	0.66	17:00	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
612	612	640	680	598	0.66	17:15	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
612	612	640	680	598	0.76	17:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	613	640	680	599	0.76	17:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	614	640	681	599	0.81	18:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
613	612	640	680	600	0.81	18:15	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
612	612	640	680	599	0.81	18:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
612	612	640	680	599	0.86	18:45	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
612	612	640	680	599	0.86	19:00	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
612	612	640	680	599	0.81	19:15	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
613	613	640	680	599	0.86	19:30	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
613	613	640	680	600	0.56	19:45	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
613	613	640	681	600	0.66	20:00	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06

623	624	651	692	610	0.56	20:15	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
613	613	640	680	600	0.71	20:30	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
613	614	640	680	601	0.51	20:45	2.5943 5	1.3231 2	18	9.18	14.41305 56	0.650602 41
613	613	640	680	600	0.76	21:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	613	640	680	600	0.76	21:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	613	640	680	600	0.71	21:30	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
613	613	640	680	601	0.66	21:45	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
613	613	640	681	601	0.71	22:00	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
613	613	640	680	601	0.66	22:15	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
612	613	640	680	601	0.76	22:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	613	640	680	601	0.86	22:45	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
613	613	640	681	601	0.86	23:00	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
614	614	640	681	604	0.66	23:15	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
614	614	640	680	604	0.76	23:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16

613	614	641	681	604	0.56	23:45	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
613	613	640	680	604	0.76	0:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
613	614	640	681	604	0.86	0:15	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
613	612	640	680	604	0.81	0:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
621	621	653	694	616	0.56	0:45	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
621	621	655	696	618	0.71	1:00	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
617	617	653	694	617	0.61	1:15	2.6128 5	1.5938 4	18	10.98	14.51583 33	0.778171 51
614	614	652	692	616	0.76	1:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
602	602	640	680	605	0.9	1:45	2.6665	2.3998 5	18	16.2	14.81388 89	1.148121 9
600	600	640	681	605	0.86	2:00	2.6591	2.2868 3	18	15.48	14.77277 78	1.097094 26
597	597	640	680	605	0.76	2:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
595	595	640	680	606	0.95	2:30	2.6757 5	2.5419 6	18	17.1	14.86527 78	1.211906 45
593	593	640	681	606	0.81	2:45	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
590	589	639	680	607	0.81	3:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71

588	587	638	679	606	0.71	3:15	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
585	584	638	678	605	0.81	3:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
582	582	637	677	605	0.71	3:45	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
580	580	637	677	604	0.81	4:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
577	577	636	677	604	0.76	4:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
575	575	636	677	603	0.81	4:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
572	572	636	677	602	0.76	4:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
570	570	635	676	601	0.76	5:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
567	567	635	676	601	0.76	5:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
565	565	634	675	600	0.76	5:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
562	562	634	675	600	0.76	5:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
560	560	634	675	599	0.81	6:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
557	557	633	674	598	0.81	6:15	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
555	555	633	674	598	0.81	6:30	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71

552	552	632	674	597	0.76	6:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
550	550	632	673	597	0.81	7:00	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
547	547	632	673	596	0.81	7:15	2.6498 5	2.1463 8	18	14.58	14.72138 89	1.033309 71
545	545	631	672	595	0.76	7:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
542	542	631	672	595	0.76	7:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
540	540	630	672	594	0.76	8:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
537	537	630	671	593	0.76	8:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
535	535	630	671	593	0.76	8:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
532	532	629	670	592	0.76	8:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
530	530	629	670	592	0.76	9:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
527	527	629	670	591	0.76	9:15	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
525	525	628	669	590	0.76	9:30	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
522	522	628	669	590	0.76	9:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
520	520	628	669	589	0.76	10:00	2.6406	2.0068 6	18	13.68	14.67	0.969525 16

517	517	627	668	588	0.76	10:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
515	515	627	668	588	0.76	10:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
512	512	627	668	587	0.76	10:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
510	510	626	667	586	0.76	11:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
507	507	626	667	586	0.76	11:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
505	505	625	666	585	0.76	11:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
502	502	625	666	585	0.76	11:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
500	500	625	666	584	0.76	12:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
497	497	624	665	583	0.76	12:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
495	495	624	665	583	0.76	12:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
492	492	623	665	582	0.76	12:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
490	490	623	664	581	0.76	13:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
487	487	623	664	581	0.76	13:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
485	485	622	664	580	0.76	13:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$

482	482	622	663	579	0.76	13:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
480	480	622	663	579	0.76	14:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
477	477	621	663	578	0.76	14:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
475	475	621	662	577	0.76	14:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
472	472	621	662	577	0.76	14:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
470	470	620	661	576	0.76	15:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
467	467	620	661	575	0.76	15:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
465	465	620	661	575	0.76	15:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
462	462	619	660	574	0.76	15:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
460	460	619	660	574	0.76	16:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
457	457	619	660	573	0.76	16:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
455	455	618	659	572	0.76	16:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
452	452	618	659	572	0.76	16:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
450	450	618	659	571	0.76	17:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$

447	447	617	658	570	0.76	17:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
445	445	617	658	570	0.76	17:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
442	442	617	658	569	0.76	17:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
440	440	616	657	568	0.76	18:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
437	437	616	657	568	0.76	18:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
435	435	616	657	567	0.76	18:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
432	432	615	656	566	0.76	18:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
430	430	615	656	566	0.76	19:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
427	427	615	656	565	0.76	19:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
425	425	614	655	564	0.76	19:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
422	422	614	655	564	0.76	19:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
420	420	614	655	563	0.76	20:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
417	417	613	654	562	0.76	20:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
415	415	613	654	562	0.76	20:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$

412	412	613	654	561	0.76	20:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
410	410	612	653	560	0.76	21:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
407	407	612	653	560	0.76	21:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
405	405	612	653	559	0.76	21:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
402	402	611	652	558	0.76	21:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
400	400	611	652	558	0.76	22:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
397	397	611	652	557	0.76	22:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
395	395	610	651	556	0.76	22:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
392	392	610	651	556	0.76	22:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
390	390	610	651	555	0.76	23:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
387	387	609	650	554	0.76	23:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
385	385	609	650	554	0.76	23:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
382	382	609	650	553	0.76	23:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
380	380	608	649	552	0.76	0:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$

377	377	608	649	552	0.76	0:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
375	375	608	649	551	0.76	0:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
372	372	607	648	550	0.76	0:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
370	370	607	648	550	0.76	1:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
367	367	607	648	549	0.76	1:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
365	365	606	647	548	0.76	1:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
362	362	606	647	548	0.76	1:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
360	360	606	647	547	0.76	2:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
357	357	605	646	546	0.76	2:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
355	355	605	646	546	0.76	2:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
352	352	605	646	545	0.76	2:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
350	350	604	645	544	0.76	3:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
347	347	604	645	544	0.76	3:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
345	345	604	645	543	0.76	3:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$

342	342	603	644	542	0.76	3:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
340	340	603	644	542	0.76	4:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
337	337	603	644	541	0.76	4:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
335	335	602	643	540	0.76	4:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
332	332	602	643	540	0.76	4:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
330	330	602	643	539	0.76	5:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
327	327	601	642	538	0.76	5:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
325	325	601	642	538	0.76	5:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
322	322	601	642	537	0.76	5:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
320	320	600	641	536	0.76	6:00	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
317	317	600	641	536	0.76	6:15	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
592	592	641	681	608	0.76	6:30	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
597	597	641	681	608	0.76	6:45	2.6406	$\frac{2.0068}{6}$	18	13.68	14.67	$\frac{0.969525}{16}$
600	600	641	681	608	0.71	7:00	$\frac{2.6313}{5}$	$\frac{1.8682}{6}$	18	12.78	$\frac{14.61861}{11}$	$\frac{0.905740}{61}$

603	603	641	681	608	0.71	7:15	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
606	605	641	681	608	0.71	7:30	2.6313 5	1.8682 6	18	12.78	14.61861 11	0.905740 61
607	607	641	681	608	0.76	7:45	2.6406	2.0068 6	18	13.68	14.67	0.969525 16
609	609	640	681	608	0.66	8:00	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06
622	622	653	693	619	0.56	8:15	2.6036	1.4580 2	18	10.08	14.46444 44	0.714386 96
612	612	641	681	608	0.66	8:30	2.6221	1.7305 9	18	11.88	14.56722 22	0.841956 06