Строим графики для T(P), S(P), E(P)

In [1]:
```
import matplotlib.pyplot as plt
import numpy as np
```

Запустим программу для $n = 20000000, m = 1000000$
$P \in (1, 16)$

In [3]:
```
info_2 = open("stats_task2.txt").readlines()
info_3 = open("stats_for_graphs.txt").readlines()
P_2 = []
T_p_2 = []
S_p_2 = []
E_p_2 = []
time_qsort = []
P_3 = []
T_p_3 = []
S_p_3 = []
E_p_3 = []
for line in info_2:
    line = line.split()
    P_2.append(int(line[0]))
    T_p_2.append(float(line[1]))
    S_p_2.append(float(line[2]))
    E_p_2.append(float(line[3]))
    time_qsort.append(float(line[4]))

for line in info_3:
    line = line.split()
    P_3.append(int(line[0]))
    T_p_3.append(float(line[1]))
    S_p_3.append(float(line[2]))
    E_p_3.append(float(line[3]))
```

In [4]:
```
plt.figure(figsize=(16, 5))
plt.title("График зависимости времени работы T(P) от P")
plt.grid()
plt.scatter(P_2, T_p_2)
plt.scatter(P_3, T_p_3)
plt.plot(P_2, T_p_2, label='OpenMP program')
plt.plot(P_3, T_p_3, label = 'pthread program')
plt.plot(P_2, time_qsort, label="time of qsort", color='r')
plt.xlabel('P')
plt.ylabel('T_p')
plt.legend()
plt.show()

plt.figure(figsize=(16, 5))
plt.title("График зависимости ускорения S(P) от P")
plt.grid()
plt.scatter(P_2, S_p_2)
plt.scatter(P_3, S_p_3)
plt.plot(P_2, S_p_2, label='OpenMP program')
plt.plot(P_3, S_p_3, label = 'pthread program')
plt.xlabel('P')
plt.ylabel('S_p')
plt.legend()
plt.show()

plt.figure(figsize=(16, 5))
plt.title("График зависимости эффективности E(P) от P")
plt.grid()
plt.scatter(P_2, E_p_2)
plt.scatter(P_3, E_p_3)
plt.plot(P_2, E_p_2, label='OpenMP program')
plt.plot(P_3, E_p_3, label = 'pthread program')
plt.xlabel('P')
plt.ylabel('E_p')
plt.legend()
plt.show()
```

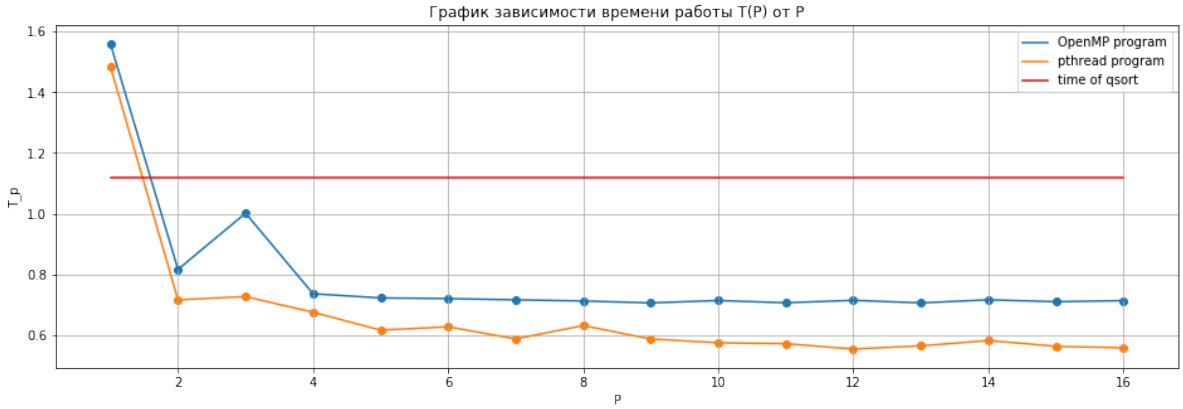
График зависимости времени работы T(P) от P
OpenMP program
pthread program
time of qsort
T_p
P

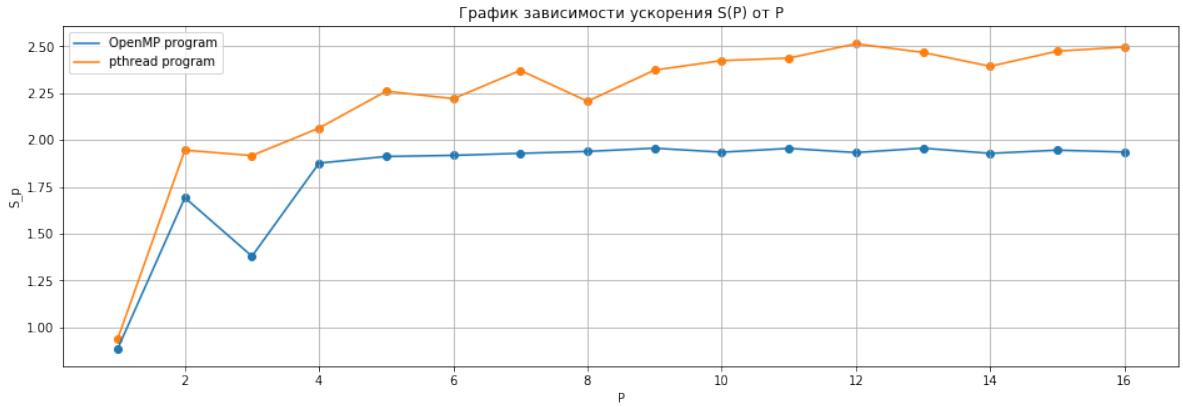
График зависимости ускорения S(P) от P
OpenMP program
pthread program
S_p
P

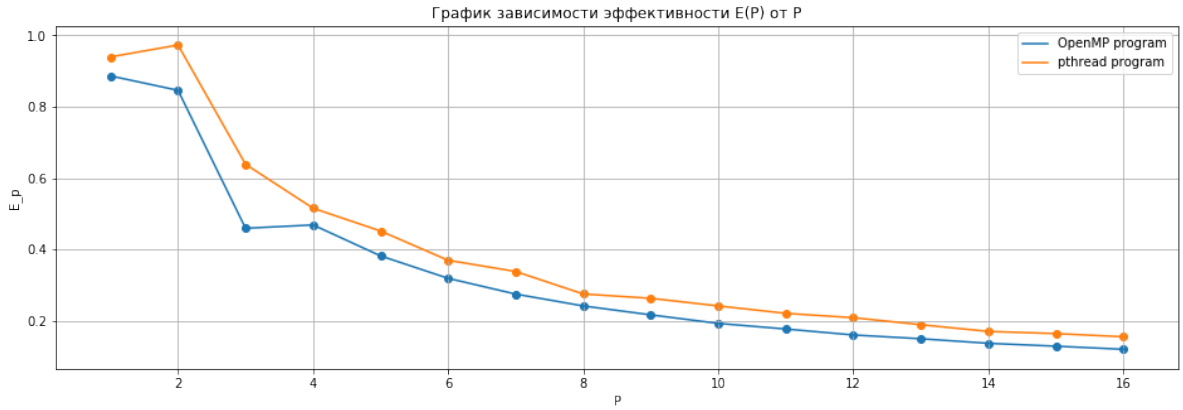
График зависимости эффективности E(P) от P
OpenMP program
pthread program
E_p
P