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In [11]:
# 연습문제 6 p213
from scipy.stats import t

df=[17, 6, 18, 17]
t_value=[-1.740, 3.143, 1.330, -2.567]

p_value=t.cdf(t_value[0], df[0])

print(f'P(T < {t_value[0]}) = {p_value:.2f}')
p_value=t.cdf(t_value[1], df[1]) - t.cdf(-t_value[1], df[1])

print(f'P(|T| < {t_value[1]}) = {p_value:.2f}')
p_value=t.cdf(-t_value[2], df[2]) - t.cdf(t_value[2], df[2])

print(f'P({-t_value[2]} < T < {t_value[2]}) = {round((abs(p_value)), 3)}')
p_value=1 - t.cdf(t_value[3], df[3])

print(f'P(T > {t_value[3]}) = {p_value:.2f}')
P(T < -1.74)=0.05
P(|T| < 3.143)=0.98
P(-1.33 < T < 1.33)=0.8
P(T > -2.567)=0.99
In [16]:
# 연습문제 6 p213 + 시각화 / P(T < -1.74) / 오류로 제외 예정 / 프리체크 필요
import matplotlib.pyplot as plt
import numpy as np
from scipy.stats import t

t_value=-1.74
df=17

x=np.linspace(t.ppf(0.01, df), t.ppf(0.99, df), 100)
y=t.pdf(x, df)

fig, ax=plt.subplots()
ax.plot(x, y, alpha=0.6, label='t pdf')
plt.title('P(T < -1.74)')
ax.fill_between(x[x < t_value], y[x < t_value], alpha=0.5)

plt.show()

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