Dr. ZABDAWI Engr. 1100/ HW 11

Name; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the attached schematics for the power plant and refrigeration cycle to compute the following parameters:

1. Find the efficiency $η $of the power plant, if the high temperature reservoir **is** $T\_{H}=1000$ , and the low temperature is $T\_{L}=100$. Give your answer in percent and round up to the nearest integer.
2. Find the Coefficient of Performance (COP) for the simple refrigeration cycle when:

$T\_{H}=90$ , and $T\_{L}=75$ (Typical of a residential air conditioning unit)

1. Identify the state of water for the given conditions:

At 100 PSI water boils at $T\_{Sat}=327.86$

You have the following readings:

1. P = 100 PSI, T = 400 $$ Water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. T = 327.86$$, P = 110 PSI Water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. P= 90 PSI , T= 327.86 $$ Water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. P = 100 PSI, T= 300 $$ Water is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Use the given data and **linear interpolation** to the answer the following:

At P = 30 PSI, water boils at T = 250.34 $$, and at P = 35 PSI, water boils at T = 259.30 $$.

So now use linear interpolation to find the saturation temperature of water at P = 33PSI.

In other words, using linear interpolation, what would be the boiling temperature of water

At P = 33 PSI.