a) $T_H = 500 K$ (highest temp for cycle)

   $T_C = 100 K$ (lowest temp for cycle)

$$e_C = \frac{T_H - T_C}{T_H} = \frac{500 K - 100 K}{500 K}$$

$$\boxed{e_C = 80 \%}$$

b) $W_{net} = W_{AB} + W_{BC} + W_{CD} + W_{DA}$

   $= (-1200 J) + (0 J) + (+600 J) + (0 J)$

   $W = -600 J$

$Q_H = Q_{AB} + Q_{DA}$ (2 processes of positive Q)

   $= 3000 J + 600 J$

$Q_H = 3600 J$

$$e = \left| \frac{W}{Q_H} \right| = \left| \frac{-600 J}{3600 J} \right|$$

$$\boxed{e = 17 \%}$$