4th exercise: 1a) Drawn.

b): $\vec{AD}(4,3)$. (given)

ABCD is a parallelogram. (given)

so, $\vec{AD} = \vec{BC}$ 1/4

then $X_{\vec{AD}} = X_{\vec{BC}}$ 1/4 & $Y_{\vec{AD}} = Y_{\vec{BC}}$.

$4 = x_C - x_B$ $\quad$ $3 = y_C - y_B$

$x_C = 8$ $\quad$ $y_C = 2$.

$C(8,2)$ 1/4

c). $C(8,2)$.

1/4 $Slope(BD) = \frac{y_D - y_B}{x_D - x_B} = 7$

1/4 $Slope(AC) = \frac{y_C - y_A}{x_C - x_A} = \frac{-1}{7}$

1/4 $Slope(BD) \times Slope(AC) = -1$

Thus, (BD) & (AC) are perpendicular. ✓

d) ABCD is a parm (given)

diagonals (BD) & (AC) are perpendicular (proved)

1/4 then ABCD is a rhombus (parm + perp. diagonals)

but $AC = \sqrt{(x_B - x_A)^2 + (y_B - y_A)^2}$ & $BD = \sqrt{(x_D - x_A)^2 + (y_D - y_A)^2}$

$= 5$ units 1/4 $\quad$ 1/4 $= 5$units

hence $AB = AD = 5$ units 1/4

Thus, rhombus ABCD is a Square (rhombus + equal diagonals)

2) a) Drawn

b) For (Ω) & (S) to be tangent externally, then distance between their centers A & B should be equal to the sum of their radii

that is: 1/2 $AB = r + r'$ ✓

$AB = 5$units

1/2 $r + r' = 2 + 3 = 5$units

Hence $AB = r + r' = 5$units ✓

Thus, (Ω) & (S) are tangent externally at E