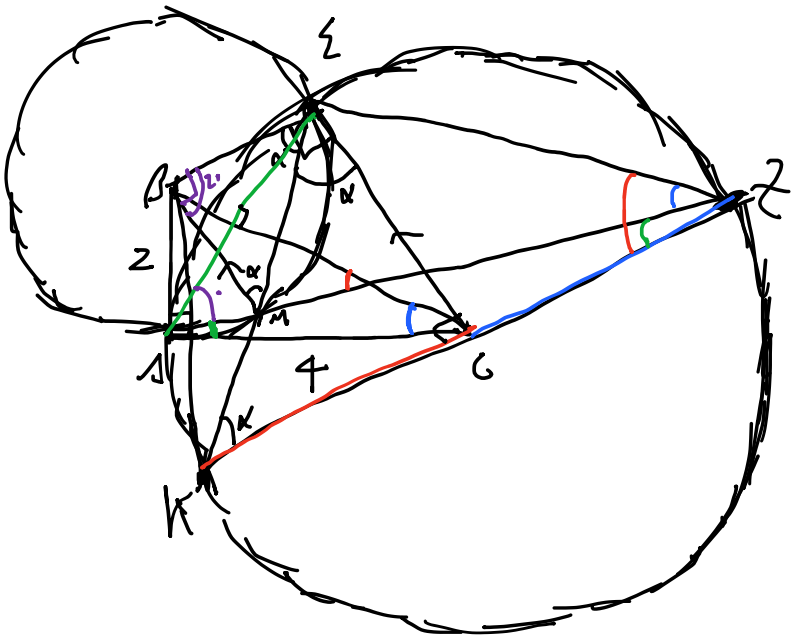
Enoch Yu

Triangle ABC has $\angle A = 90°$, $AB = 2$, and $AC = 4$. Circle ω_1 has center C and radius CA, while circle ω_2 has center B and radius BA. The two circles intersect at point E, different from point A. Point M is on ω_2 and in the interior of ABC, such that BM is parallel to EC. Suppose EM intersects ω_1 at point K and AM intersects ω_1 at point Z. What is the area of quadrilateral $ZEBK$?



$\Delta ABC \cong \Delta EBC$

$\alpha = 45°$

K, C, Z are collinear

$[ZEBK] = [\Delta EBK] + [\Delta KEZ]$

$= \frac{1}{2} \cdot 4 \cdot 4\sqrt{2} \cdot \frac{\sqrt{2}}{2}$

$+ \frac{1}{2} \cdot 8 \cdot 4$

$= 4 + 16$

$= \boxed{20}$