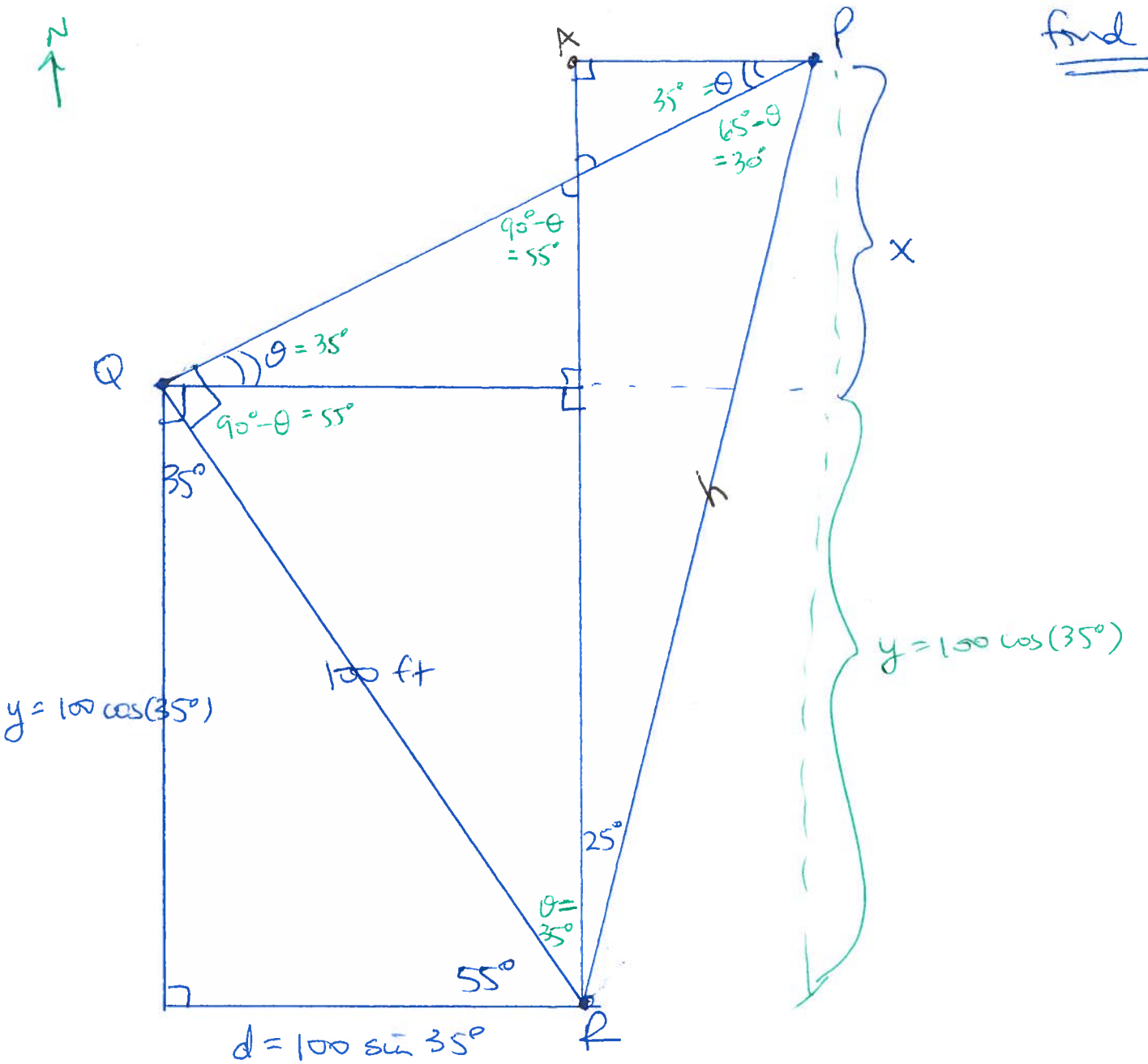
5.6 #39

goal
find x



$$\cos 25° = \frac{x+y}{h} = \frac{x + 100\cos(35°)}{h} \quad \text{(from } \Delta APR\text{)}$$

$$\Rightarrow h\cos 25° - 100\cos(35°) = x$$

from ΔPQR: $\cos(25°+35°) = \frac{100}{h} \Rightarrow h = \frac{100}{\cos(60°)}$

$$\Rightarrow x = \frac{100}{\cos(60°)}(\cos 25°) - 100\cos(35°)$$

$$= 100\left(2\cos(25°) - \cos(35°)\right) \approx \boxed{99.35 \text{ ft}}$$