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Solution:

$$v_{0x} = 200 \cos(30^\circ) = 173.2 \text{ m/s}$$

$$v_{0y} = 200 \sin(30^\circ) = 100 \text{ m/s}$$

$$t = \frac{2v_{0y}}{g} = \frac{2 \cdot 100}{9.81} = 20.39 \text{ s}$$

$$R = v_{0x} \cdot t = 173.2 \cdot 20.39 = 3525.5 \text{ m}$$

Extension A: if there is a hill halfway between you and your target that is 550 meters high, will your cannonball make it over? (no, the max height is 509.68 m).

Extension B: What could you do instead? (Try 60 degrees; same range, max height is 1521.5 m)
