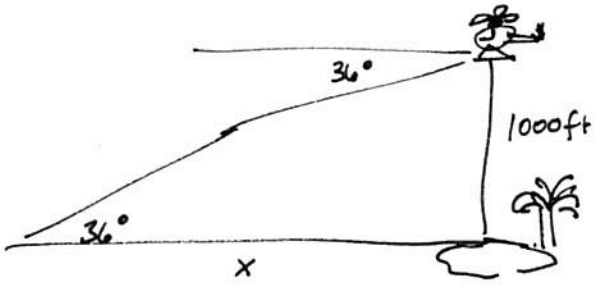
MTH 162, Quiz #5, Spring 2025 Name KEY

Instructions: Show all work. Use exact answers unless specifically asked to round. Answer all parts of each question.

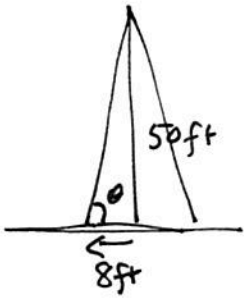
1. A helicopter hovers 1000 feet above a small island. The angle of depression from the helicopter to a point P on the coast is 36°. How far off the coast is the island?



$\tan 36° = \frac{1000}{x}$

$x = \frac{1000}{\tan 36°} = 1376.38\ldots$ feet

2. A 50-foot-high tower is secured with a guy-wire anchored 8 feet from the base of the tower. What angle will the guy-wire make with the ground?



$\tan\theta = \frac{50}{8}$

$\theta \approx 80.9°$

3. The angle of elevation of the top of a church to a point 100 feet away from the base is 55°. Find the height of the church.

$\tan 55° = \frac{x}{100}$

$100 \tan 55° = x$

$= 142.81\ldots$ ft.