A projectile is fired from the top of a cliff of height h above the ocean below. The projectile is fired at an angle θ above the horizontal and with an initial speed vi.

(a) Find a symbolic expression in terms of the variables vi, g, and θ for the time at which the projectile reaches its maximum height.

$vi \cdot \sin \theta - g \cdot t = 0$ when the projectile reaches its maximum height.

$t = \frac{vi \cdot \sin \theta}{g}$

(b) Using the result of part (a), find an expression for the maximum height hmax above the ocean attained by the projectile in terms of h, vi, g, and θ.

$hmax = h + vi \cdot \sin \theta \cdot t = h + \frac{vi^2 \cdot \sin^2 \theta}{g}$