

PRE-AP ALGEBRA 2

1A.5 CLASSWORK

Mr. Cossens hits a golf ball from the tee on a par 3 hole. The tee is 100 ft above the green. When hit, the initial upward velocity of the ball is 130 ft/sec. How long after the golf ball is hit does it land on the green?

$$y = y_0 + v_0 t - \frac{1}{2} g t^2$$

$$t=0 \text{ is the tee, } y_0 = 100, v_0 = 130, g = 32.2$$

$$y = 100 + 130t - \frac{1}{2}(32.2)t^2$$

$$y = -16.1t^2 + 130t + 100$$

$$y = 0 \text{ on the green} \Rightarrow$$

$$0 = -16.1t^2 + 130t + 100 \quad 16.1t^2 - 130t - 100 = 0$$

$$\text{Quadratic Formula, } a = 16.1, b = -130, c = -100$$

$$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{130 \pm \sqrt{(-130)^2 - 4(16.1)(-100)}}{2(16.1)} = \frac{130 \pm \sqrt{23,340}}{32.2}$$

$$t = \frac{130 - \sqrt{23,340}}{32.2} = -0.707 \text{ sec } \times$$

$$t = \frac{130 + \sqrt{23,340}}{32.2} = 9.782 \text{ sec } \checkmark$$