PRE-CALCULUS · HOMEWORK · ADVANCED

Model Projectile Motion

SCORE / 25

01 Part A · Practice

A projectile launched at speed v and angle θ from height h: $x = (v\cos\theta)t$, $y = h + (v\sin\theta)t - 16t^2$ (feet) or $-4.9t^2$ (meters).

1 ●○○ A ball is launched at 96 ft/s at 60° from a height of 5 ft. Write parametric equations for its path (use $-16t^2$).

2 ●○○ A ball is thrown from 0 ft at 114 ft/s at 67°. Using $x = (114\cos 67°)t$, $y = 0 + (114\sin 67°)t - 16t^2$, find its position at $t = 0.5$ s. Round to the nearest tenth.

3 ●○○ A ball is kicked from the ground at 128 ft/s at 30°. How long is it in the air? Give an exact answer.

4 ●○○ A ball is hit from 5 ft at 48 ft/s at 30°, so $y = 5 + (48\sin 30°)t - 16t^2$. Find its maximum height (exact).

5 ●○○ A ball is launched at 96 ft/s at 45° from a height of 6 ft. Write parametric equations for its path (use $-16t^2$).

6 ●○○ A ball is kicked from the ground at 80 ft/s at 30°. How long is it in the air? Give an exact answer.

7 ●○○ A ball is thrown from 3 ft at 76 ft/s at 34°. Using $x = (76\cos 34°)t$, $y = 3 + (76\sin 34°)t - 16t^2$, find its position at $t = 0.5$ s. Round to the nearest tenth.

8 ●○○ A ball is hit from 0 ft at 64 ft/s at 30°, so $y = 0 + (64\sin 30°)t - 16t^2$. Find its maximum height (exact).

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Preview - the full worksheet and its answer key are at primeworksheet.com