Example:

Suppose that a cow is launched from a tower 15 meters off the ground at an angle of 30° from the horizontal with an initial speed of 60 meters per second. If the only force acting on the cow is gravity,

1. how far will it travel?

2. what is its maximum height?

In Class Work

A cow is launched from a catapult at ground level with an initial speed of 50 meters per second and at an angle of θ from the horizontal. Assume that the only force acting on the cow is gravity.

1. Find a vector-valued function $\overrightarrow{\mathbf{r}}(t)$ that describes the path travelled by the cow. Note that your answer will involve θ as a constant.

2. At what time will the cow hit the ground?

3. How far from the launch point will the cow hit the ground?

4. Find the value of θ that will maximize the horizontal distance traveled.