

Name:

Section: 2 4 (circle one)

1. Let $r(t) = \cos(2\pi t)i + \sin(2\pi t)j + t^2k$ for $0 \leq t \leq 4$. Draw a reasonable sketch of the associated curve, and give the equation of the tangent line to the curve at $t = 2$.

2. For $r(t) = \cos(2\pi t)i + \sin(2\pi t)j + t^2$, find $\int_0^\pi r(t) dt$.

3. Earth: A projectile is fired from the origin (the ground) at an initial speed of $100m/s$ and launch angle of $\pi/3$. Find the object's position position after 10 seconds.

4. Planet Γ : A projectile is fired from the origin (the ground) at an initial speed of $100m/s$ and launch angle of $\pi/3$. Find the object's position position after 10 seconds. (note: gravity on Planet Γ is $3\frac{m}{s^2}$).

5. For problems 3) and 4), determine where the objects hits the ground.

6. Determine the maximum height achieved by the object on Planet Γ .