

14. Two guys attend a baseball game and the marvel at the height a ball can achieve when a batter hits it. Player#4 hits the ball whose vertical motion can be described by the following equation: $f(t) = -5t^2 + 45t + 1$, where t represents time in seconds and $f(t)$ represents height in meters. Player#7 hits the ball whose vertical motion can be described by this second equation: $g(t) = -5t^2 + 48t + 1$. Calculate the difference in the maximum height achieved by each baseball.

10 marks

15. A skeet shooter sets up his gun on an elevated stationary stand. He is unable to adjust the aim of his gun but has it aimed in a fixed direction so that he has two chances of hitting a projectile target launched from a fixed position. The two chances that he has to hit the target are early (1 meter horizontally from the target) as it is rising or at a later point (8 meters horizontally from the target) when it is falling. The equation that describes the motion of the target is: $k(x) = -(x - 5)^2 + 18$. What is the elevation of the shooting stand?

10 marks

