1. (i) Player-To-Target

(5, 1, 5) – (8, -3, -7) = (-3, 4, 12)

(ii) Distance

= 12

(iii) Calculate Player Forward

= 7.1414  
 1/7.1414(5, 1, 5)

(iv) v ∙ u

1/7.1414 (5(8) + 1(-3) + 5(-7)) = 0.28

Yes, 0.28 < 0

(v) 𝑣 ∙ 𝑢 = |𝑣||𝑢| cos𝜃

u = 26   
 0.28 = (7.1414)( 26)cos𝜃  
 0.28/(185.6764‬) = Cos𝜃  
 Cos𝜃 = 0.0108  
 𝜃 = cos-1(0.0015)  
 𝜃 = 89.9135

No, the angle 89.9135 is greater than 10

1. (i) All of the physics calculations and forces are made dependant and scale with the flow of real time, ensuring physics and motion are consistent regardless of framerate.

(ii) A character walks forward on the x axis

double speed = 5.55f;  
 move = new Vector3(Input.getAxis(“Horizontal”), 0.0f, Input.getaxis(“Vertical”);  
  
 move.x += speed \* Time.deltaTime;

(iii) Taking a sphere suspended at 20 on the y axis, the code to apply a gravitational force would be

double g = 9.81f;  
 move = new Vector3(Input.getAxis(“Horizontal”), 0.0f, Input.getaxis(“Vertical”);  
  
 move.y -= g\* Time.deltaTime;

This accelerates the object downwards at 9.81m/s/s relying on time rather than framerate

(iv)