Physics 200 (Stapleton) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

More non-orthogonal problem practice

A student is out of her seat, walking across the floor a moving school bus. The bus is traveling in a direction 37° N of W at a speed of 2m/s, but the student’s velocity is 2.2m/s in a direction 15° S of W. Find the student’s heading and *speed on a still bus*. Let B = bus velocity, S = student velocity, and H = student heading and speed on a still bus.

a. (1pt) What are the x and y components (N/S and E/W components, actually) of the bus’ velocity (B)?

Bx = \_\_\_\_\_\_\_\_\_\_ By = \_\_\_\_\_\_\_\_\_\_\_

b. (1pt) What are the x and y components of the student’s velocity (S)?

Sx = \_\_\_\_\_\_\_\_\_\_ Sy = \_\_\_\_\_\_\_\_\_\_\_

c. (3pts) What are the x and y components of the student’s heading and speed on a still bus (H)?

Hx = \_\_\_\_\_\_\_\_\_\_ Hy = \_\_\_\_\_\_\_\_\_\_\_

d. (3pts) Describe the student’s speed and heading (H). For direction, provide a precise angle relative to the x or y axis.

Student speed on a still bus = \_\_\_\_\_\_\_\_\_\_\_

Student Heading = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_