Problem #1

Harry is moving toward Sally at $\frac{4}{5}c$. Harry has a mass of 50 kg and Sally is 40 kg. At the instant that he passes her, she decides to pursue him and accelerates at $g$ to catch him. Where and when does she catch him? (10 points) During the trip, she sends out a light signal at intervals of $\Delta\tau$, where $\Delta\tau$ is once a month. When does Harry say he gets these signals? (10 points) How fast does he say that she is traveling when they collide? (10 points) What does he say is her acceleration when they collide? (10 points)

Solution Problem #1

Problem #2

In the previous problem, just before Harry and Sally collide, Sally turns off the acceleration and they then move together. What is their velocity from the point of view of Sally's original frame of reference? (10 points) What is their energy and momentum in this frame? (10 points) What is their mass after the collision? (5 points)

Solution Problem #2

Problem #3

Once again, Harry is moving toward Sally at $\frac{4}{5}c$. Sally notes that simultaneous with the arrival of Harry, there are three explosions at positions 2 ltyrs, 3 ltyrs, and 4 ltyrs. When and where does Harry say that these explosions took place? (10 points) From when on were each of these explosions in Sally's past? (5 points) From when on were each of these explosions in Harry's past according to Sally? (10 points) According to Harry? (10 points)

Solution Problem #3