14. Apparent retrograde motion is caused by a projection effect occurring when one planet overtakes another in their orbits around the Sun. Over the course of 2022-2023, Mars will undergo apparent retrograde motion as viewed from Earth, as it does once every approximately two years (every time Mars goes around the Sun, Earth goes around the Sun and passes by Mars almost twice; Mars' orbit around the Sun takes 1.88 Earth years). Below, using Stellarium, write the approximate date over the course of 2022-2023 when Mars will begin its apparent retrograde motion and also write the approximate date of Mars' return to direct (prograde) motion.

➢ Change the time to 2022/01/01, 23:00 (11:00PM)
➢ In the bottom menu, turn on Constellations, and to the right of Constellations Art and to the left of Equatorial Grid, turn off Landscape
➢ Center Mars by searching for and clicking on Mars’ name in the top Search window when the option pops up
➢ Progress the date, day by day, from 2022/01/01 through to 2023/12/31. You can hold down the up arrow to progress quickly. Pay attention to the initial direct motion of Mars, when this apparent motion reverses to retrograde motion, and when this motion returns to direct motion as before

a) Over the course of 2022-2023, Mars will begin apparent retrograde motion once. What is the approximate date and year this will occur?

b) Over the course of 2022-2023, Mars will end apparent retrograde motion and return to direct motion. What is the approximate date and year of this occurrence?