NASA Resources for Calculus classes

Sample Problems taken from Space Math Calculus
https://spacemath.gsfc.nasa.gov/calculus.html

1. Students use calculus to solve for the growth in mass of a body, and solve the equation for the case of a raindrop and a planet like Earth. [Topics: Solving a simple differential equation.]
    https://spacemath.gsfc.nasa.gov/Calculus/9Page20.pdf

2. Students use calculus to determine the volume of a crater whose depth is defined by a fourth-order polynomial [Topics: Integration involving volumes of rotation]
    https://spacemath.gsfc.nasa.gov/Calculus/9Page19.pdf

3. Students use parametric equations and calculus to determine the linear equation for the path of Barnards Star, and then determine when the minimum distance to the sun occurs [Topics: Derivitives and minimization] https://spacemath.gsfc.nasa.gov/Calculus/9Page18.pdf

4. Students use a recent image of the nucleus of Comet Hartley 2 taken by the Deep Impact/EPOXI camera and a shape function described by a fourth-order polynomial to calculate the volume of the comet's head using integral calculus. to estimate the volume of the comets nucleus, and its total mass, [Topics: Volume integral using disk method; scale model; scientific notation; unit conversion] https://spacemath.gsfc.nasa.gov/Calculus/7Page48.pdf

5. Students use a simple, spherically symmetric, density profile to determine the mass of the sun using integral calculus. [Topics: Algebra II; Polynomials; integral calculus]
    https://spacemath.gsfc.nasa.gov/Calculus/6Page102.pdf