CZ2003 Tutorial 3 (2022/23, Semester 1)
Curves

1. Write parametric formulas *x(u), y(u)* for the ray cast from the point with coordinates (1, 2) through the point with coordinates (4, 3). Define the domain for the parameter *u*.

2. Using an equation in intercepts, obtain an implicit formula *f*(*x*,*y*)=0 for the straight line intersecting the coordinate axes X and Y at the points with coordinates (-2, 0) and (0, 3), respectively.

3. With reference to Figure Q3, write parametric functions $x(u)$, $y(u)$, $u \in [0, 1]$ defining this spiral curve which has to be drawn clockwise from the point with coordinates (0, 0.3). **Display the curve and attach a screenshot of ShapeExplorer.**

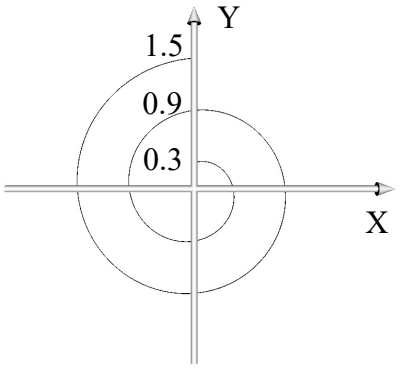

Figure Q3

4. Based on the way how polar coordinates are mapped to Cartesian, propose parametric functions $x(u)$, $y(u)$, $u \in [0, 1]$ which make the trigonometric sinusoidal curve (sine wave) follow a semicircle (half circle) with the radius of 0.75. The curve has to make 10 periodic oscillations (cycles) moving counterclockwise around the semicircle with the oscillations amplitude of ±0.25 as shown in Figure Q4. **Display the curve and attach a screenshot of ShapeExplorer.**

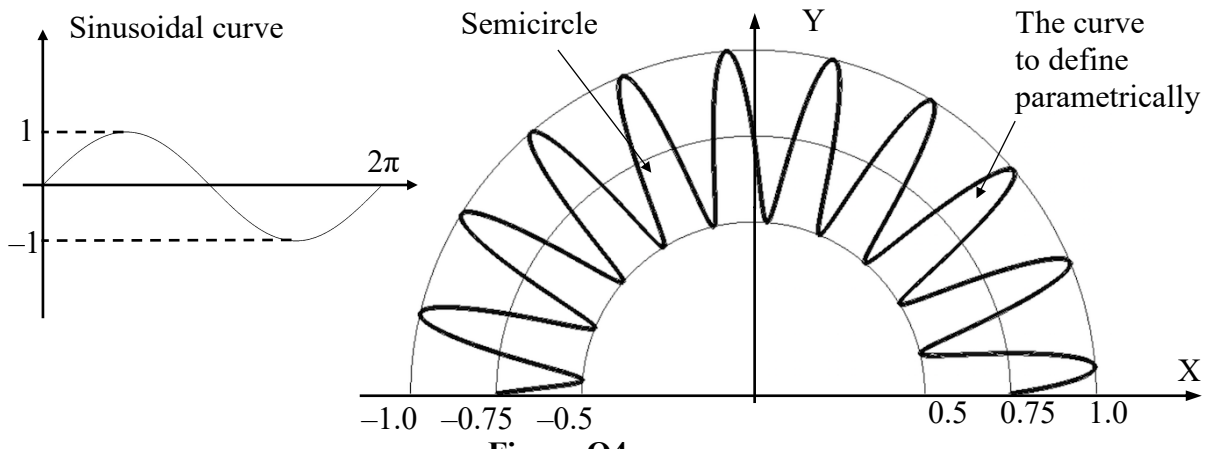

Figure Q4