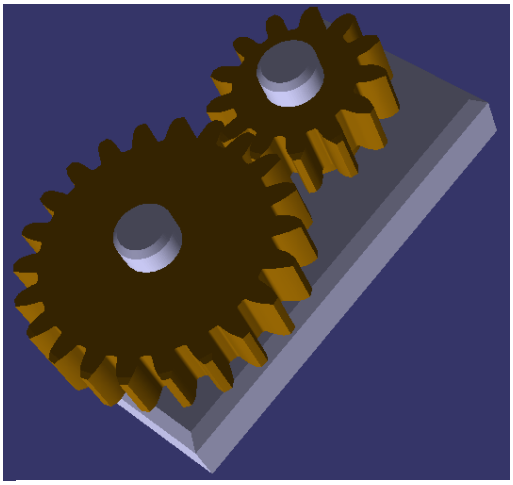
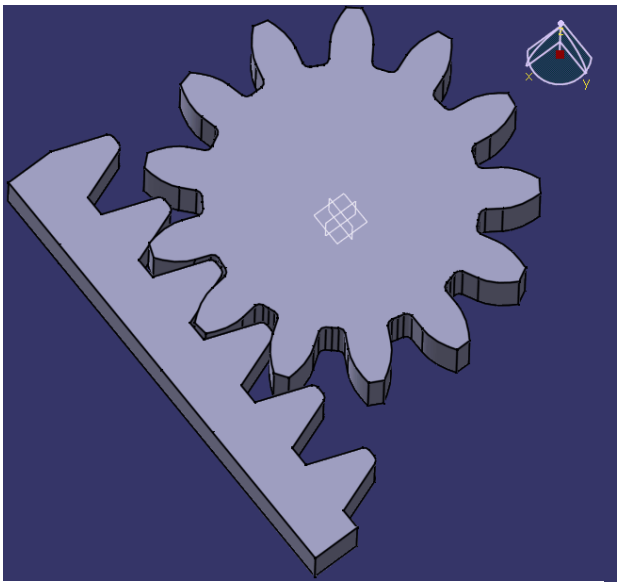
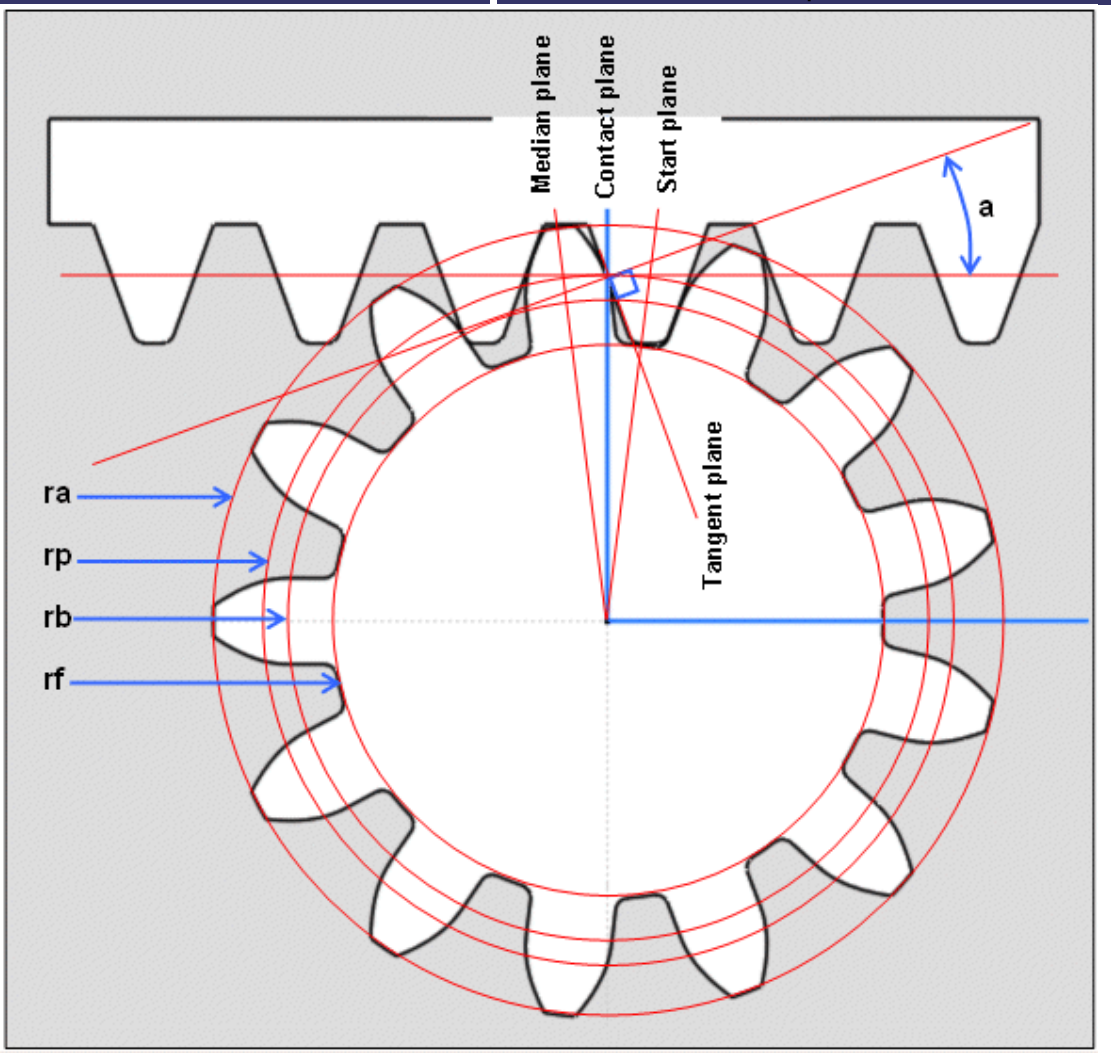
تمرین طراحی پارامتریک چرخنده







- **پارامترهای طراحی**

#	Parameter	Type or unit	Formula	Description
1	a	angular degree	20deg	Pressure angle: technologic constant (10deg ≤ a ≤ 20deg)
2	m	millimeter	—	Modulus.
3	Z	integer	—	Number of teeth (5 ≤ Z ≤ 200).
4	p	millimeter	m * π	Pitch of the teeth on a straight generative rack.
5	e	millimeter	p / 2	Circular tooth thickness, measured on the pitch circle.
6	ha	millimeter	m	Addendum = height of a tooth above the pitch circle.
7	hf	millimeter	if m > 1.25 hf = m * 1.25 else hf = m * 1.4	Dedendum = depth of a tooth below the pitch circle. Proportionnally greater for a small modulus (≤ 1.25 mm).
8	rp	millimeter	m * Z / 2	Radius of the pitch circle.
9	ra	millimeter	rp + ha	Radius of the outer circle.
10	rf	millimeter	rp - hf	Radius of the root circle.
11	rb	millimeter	rp * cos(a)	Radius of the base circle.
12	rc	millimeter	m * 0.38	Radius of the root concave corner. (m * 0.38) is a normative formula.
13	t	floating point number	0 ≤ t ≤ 1	Sweep parameter of the involute curve.
14	yd	millimeter	rb * (sin(t * π) - cos(t * π) * t * π)	Y coordinate of the involute tooth profile, generated by the t parameter.
15	zd	millimeter	rb * (cos(t * π) + sin(t * π) * t * π)	Z coordinate of the involute tooth profile.
16	ro	millimeter	rb * a * π / 180deg	Radius of the osculating circle of the involute curve, on the pitch circle.
17	c	angular degree	sqrt(1 / cos(a)^2 - 1) / PI * 180deg	Angle of the point of the involute that intersects the pitch circle.
18	phi	angular degree	atan(yd(c) / zd(c)) + 90deg / Z	Rotation angle used for making a gear symetric to the ZX plane

Sources

- Engrenages H.P.C, June 1999 edition.