CLAIMS

1. A multifocal diffractive lens, comprising a diffraction grating,
wherein negative-order light produces a focal point for far vision and 0-order light produces a focal point nearer to the multifocal diffractive lens than that for the far vision,
wherein positive-order light produces a focal point nearer to the multifocal diffractive lens than that of the 0-order light,
wherein a number of focal points is three or more,
wherein the diffraction grating is in a combined shape of kinoform profiles, and
wherein a focal position for the far vision in polychromatic performance evaluation is located nearer to the multifocal diffractive lens than the focal position for the far vision in monochromatic performance evaluation.

2. The multifocal diffractive lens of claim 1,
wherein a correction term of a medium refractive index is added to the kinoform profiles.

3. The multifocal diffractive lens of claim 1 or 2,
wherein a correction term of a pupil dilation ratio is added to the kinoform profiles.

4. The multifocal diffractive lens of any one of claims 1, 2, and 3,
wherein the multifocal diffractive lens is a trifocal diffractive lens that has one additional focal point in addition to two focal points produced by a bifocal diffractive lens,
wherein a near addition power of the trifocal diffractive lens is twice of that of the bifocal diffractive lens, and
wherein a number of diffraction fringes is the same between the bifocal diffractive lens and the trifocal diffractive lens.

5. The multifocal diffractive lens of any one of claims 1, 2, and 3,
wherein the multifocal diffractive lens is a quadrifocal diffractive lens that has two additional focal points in addition to two focal points produced by a bifocal diffractive lens,
wherein a near addition power of the quadrifocal diffractive lens is three times of that of the bifocal diffractive lens, and

wherein a number of diffraction fringes is the same between the bifocal diffractive lens and the quadrifocal diffractive lens.

6. The multifocal diffractive lens of any one of claims 1 and 2 to 4,
wherein the diffraction grating is in a combined shape of two kinoform profiles and has a height of half of a diffraction grating height of the two kinoform profiles,
wherein light is allocated to negative-order light that produces a focal point farther from the multifocal diffractive lens than that of the 0-order light and positive-order light that produces a focal point nearer to the multifocal diffractive lens than that of the 0-order light, and
wherein an order of the negative-order light is the same as an order of the positive-order light.

7. The multifocal diffractive lens of any one of claims 1, 2, 3, and 5,
wherein the diffraction grating is in a combined shape of two kinoform profiles,
wherein diffraction grating heights of the two kinoform profiles are different from each other,
wherein light is allocated to negative-order light that produces a focal point farther from the multifocal diffractive lens than that of the 0-order light and positive-order light that produces a focal point nearer to the multifocal diffractive lens than that of the 0-order light, and
wherein an order of the negative-order light and an order of the positive-order light are different from each other.

8. The multifocal diffractive lens of any one of claims 1 and 2 to 7,
wherein a jagged part of the diffraction grating comprises planarized regions.

9. The multifocal diffractive lens of any one of claims 1 and 2 to 8,
wherein the multifocal diffractive lens is formed of optical material with normal dispersion with a material refractive index between 1.45 and 1.56, inclusive, at a wavelength of 546 nm, and
wherein power setting between respective focal points is 0.75D or more.

10. The multifocal diffractive lens of any one of claims 1 and 2 to 9,

wherein the multifocal diffractive lens has a pair of optical surfaces,
wherein one of the pair of optical surfaces includes the diffraction grating, and
wherein the other of the pair of optical surfaces is in a toric shape.

11. The multifocal diffractive lens of any one of claims 1 and 2 to 10,
wherein the diffraction grating is in a combined shape of a diffraction grating geometry with a positive-power addition and a diffraction grating geometry with a negative-power addition.

12. The multifocal diffractive lens of any one of claims 1, 2 to 4, and 6,
wherein the multifocal diffractive lens is a trifocal diffractive lens of -1-order, 0-order, and +1-order,
wherein the diffraction grating is in a combined shape of a first kinoform profile with a diffraction grating geometry with a positive-power addition corresponding to +1-order light and the 0-order light and a second kinoform profile with a diffraction grating geometry with a negative-power addition corresponding to -1-order light and the 0-order light.

13. The multifocal diffractive lens of any one of claims 1, 2, 3, 5, and 7,
wherein the multifocal diffractive lens is a quadrifocal diffractive lens of -1-order, 0-order, +1-order, and +2-order,
wherein the diffraction grating is in a combined shape of a first kinoform profile with a diffraction grating geometry with a positive-power addition corresponding to +1-order light and +2-order light and a second kinoform profile with a diffraction grating geometry with a negative-power addition corresponding to -1-order light and the 0-order light.

14. The multifocal diffractive lens of any one of claims 1 and 2 to 13,
wherein the diffraction grating has a constant height.

15. The multifocal diffractive lens of any one of claims 1 and 2 to 14,
wherein the diffraction grating is in a combined shape of two kinoform profiles,
wherein a number of diffraction fringes is the same between the two kinoform profiles,

wherein a number of diffraction fringes of the diffraction grating is the same as the number of diffraction fringes of the kinoform profile.

16. The multifocal diffractive lens of any one of claims 1 and 2 to 15,
wherein the diffraction grating is in a combined shape of two kinoform profiles,
wherein a height of the diffraction grating is lower than heights of the two kinoform profiles.