

| l | m | $Y_{lm}(\theta, \phi)$ | $rY_{lm}(x, y, z)$ |
|-----|---------|---|---|
| 0 | 0 | $\frac{1}{\sqrt{4\pi}}$ | $\frac{1}{\sqrt{4\pi}}$ |
| 1 | 0 | $\sqrt{\frac{3}{4\pi}} \cos \theta$ | $\sqrt{\frac{3}{4\pi}} z$ |
| 1 | ± 1 | $\mp \sqrt{\frac{3}{8\pi}} \sin \theta e^{\pm i\phi}$ | $\mp \sqrt{\frac{3}{8\pi}} (x \pm iy)$ |
| 2 | 0 | $\sqrt{\frac{5}{4\pi}} \sqrt{\frac{1}{4}} (3 \cos^2 \theta - 1)$ | $\sqrt{\frac{5}{4\pi}} \sqrt{\frac{1}{4}} (3z^2 - r^2)$ |
| 2 | ± 1 | $\mp \sqrt{\frac{5}{4\pi}} \sqrt{\frac{3}{2}} \sin \theta \cos \theta e^{\pm i\phi}$ | $\mp \sqrt{\frac{5}{4\pi}} \sqrt{\frac{3}{2}} z (x \pm iy)$ |
| 2 | ± 2 | $\sqrt{\frac{5}{4\pi}} \sqrt{\frac{3}{8}} \sin^2 \theta e^{\pm 2i\phi}$ | $\sqrt{\frac{5}{4\pi}} \sqrt{\frac{3}{8}} (x \pm iy)^2$ |
| 3 | 0 | $\sqrt{\frac{7}{4\pi}} \sqrt{\frac{1}{4}} (2 \cos^3 \theta - 3 \cos \theta \sin^2 \theta)$ | $\sqrt{\frac{7}{4\pi}} \sqrt{\frac{1}{4}} z (5z^2 - 3r^2)$ |
| 3 | ± 1 | $\mp \sqrt{\frac{7}{4\pi}} \sqrt{\frac{3}{16}} (4 \cos^2 \theta \sin \theta - \sin^3 \theta) e^{\pm i\phi}$ | $\mp \sqrt{\frac{7}{4\pi}} \sqrt{\frac{3}{16}} (5z^2 - r^2) (x \pm iy)$ |
| 3 | ± 2 | $\sqrt{\frac{7}{4\pi}} \sqrt{\frac{15}{8}} \cos \theta \sin^2 \theta e^{\pm 2i\phi}$ | $\sqrt{\frac{7}{4\pi}} \sqrt{\frac{15}{8}} z (x \pm iy)^2$ |
| 3 | ± 3 | $\mp \sqrt{\frac{7}{4\pi}} \sqrt{\frac{5}{16}} \sin^3 \theta e^{\pm 3i\phi}$ | $\mp \sqrt{\frac{7}{4\pi}} \sqrt{\frac{5}{16}} (x \pm iy)^3$ |
| 4 | 0 | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{1}{64}} (35 \cos^4 \theta - 30 \cos^2 \theta + 3)$ | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{1}{64}} (35z^4 - 30z^2 r^2 + 3r^4)$ |
| 4 | ± 1 | $\mp \sqrt{\frac{9}{4\pi}} \sqrt{\frac{5}{16}} \sin \theta (7 \cos^3 \theta - 3 \cos \theta) e^{\pm i\phi}$ | $\mp \sqrt{\frac{9}{4\pi}} \sqrt{\frac{5}{16}} (7z^3 - 3zr^2) (x \pm iy)$ |
| 4 | ± 2 | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{5}{32}} \sin^2 \theta (7 \cos^2 \theta - 1) e^{\pm 2i\phi}$ | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{5}{32}} (7z^2 - r^2) (x \pm iy)^2$ |
| 4 | ± 3 | $\mp \sqrt{\frac{9}{4\pi}} \sqrt{\frac{35}{16}} \sin^3 \theta \cos \theta e^{\pm 3i\phi}$ | $\mp \sqrt{\frac{9}{4\pi}} \sqrt{\frac{35}{16}} z (x \pm iy)^3$ |
| 4 | ± 4 | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{35}{128}} \sin^4 \theta e^{\pm 4i\phi}$ | $\sqrt{\frac{9}{4\pi}} \sqrt{\frac{35}{128}} (x \pm iy)^4$ |