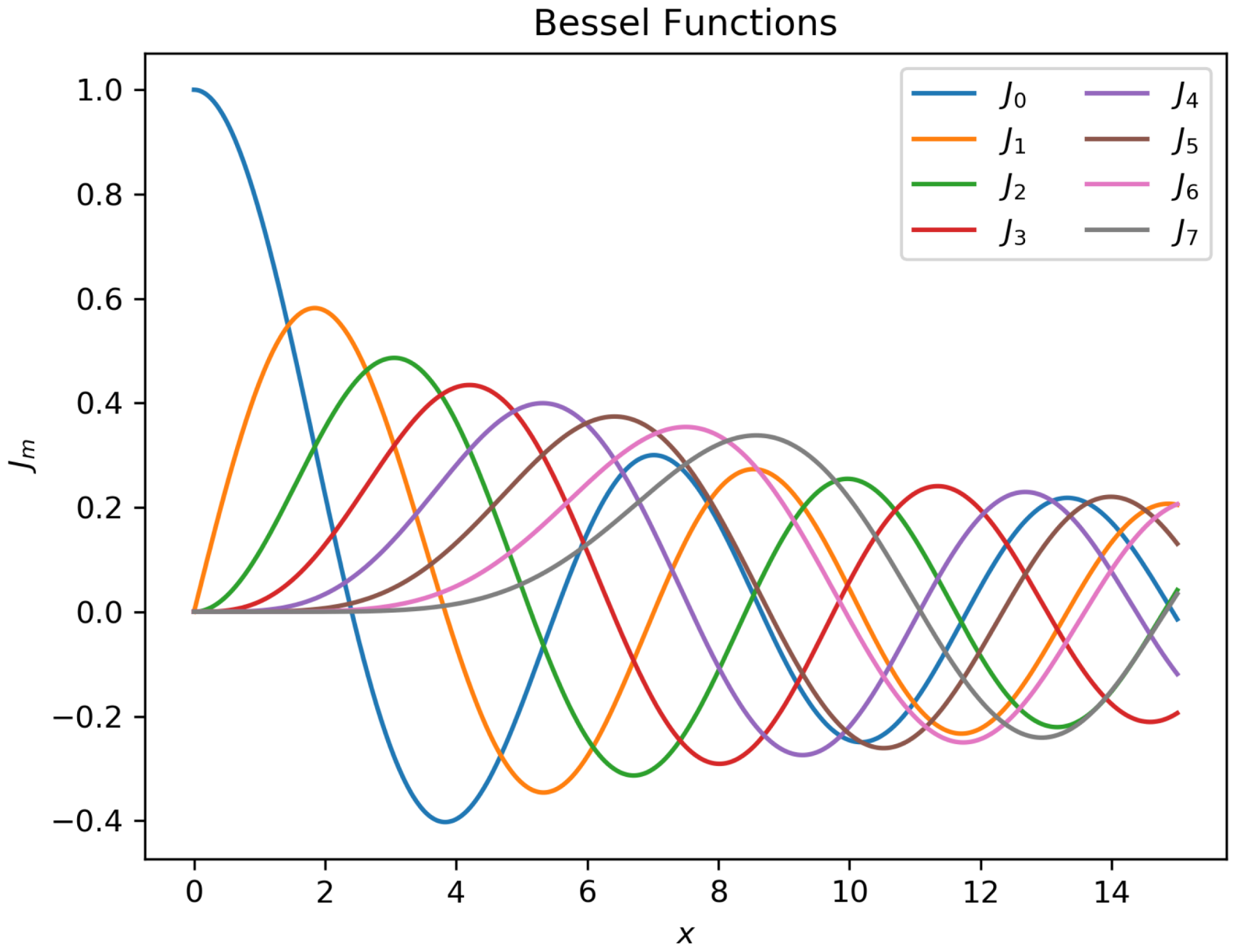
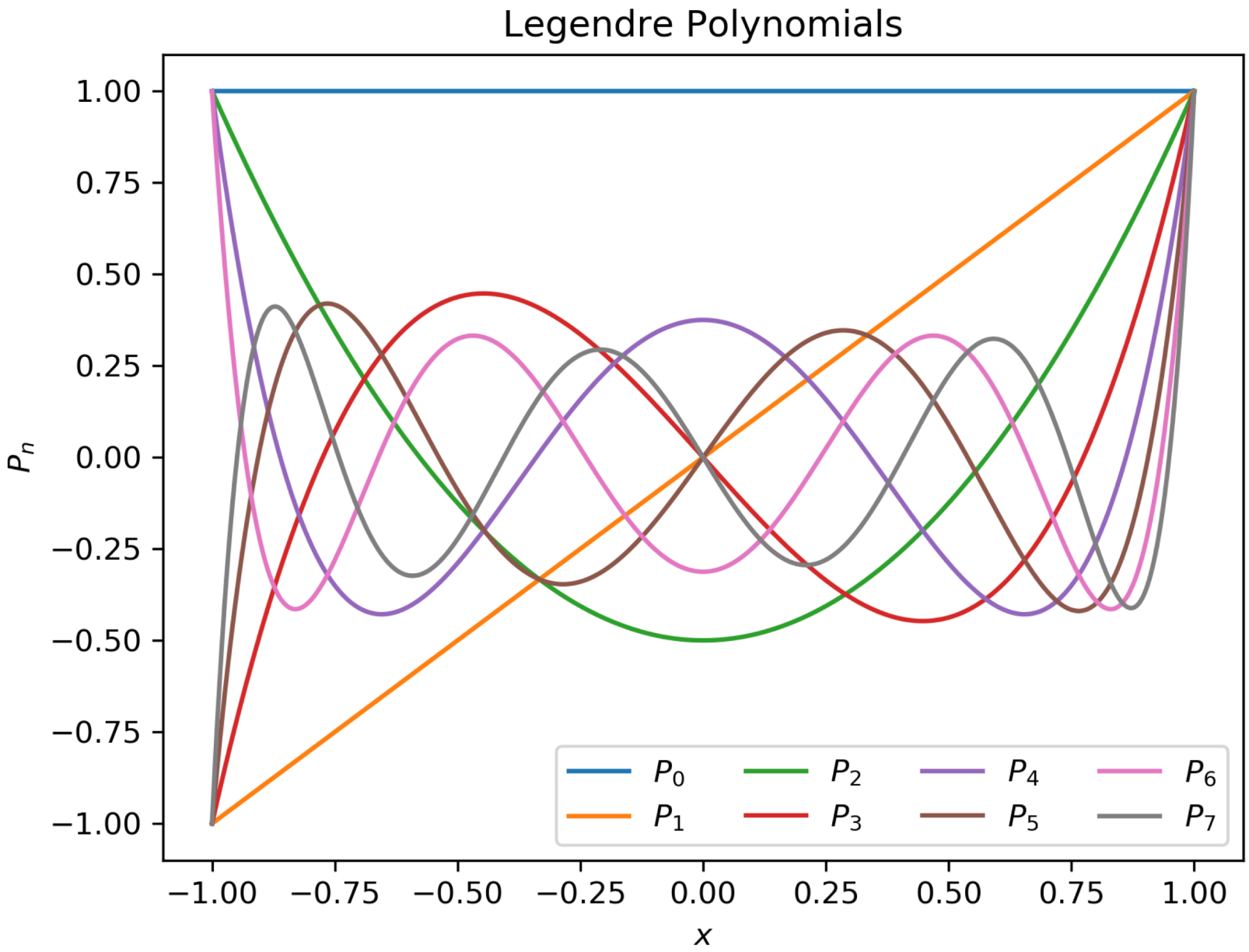
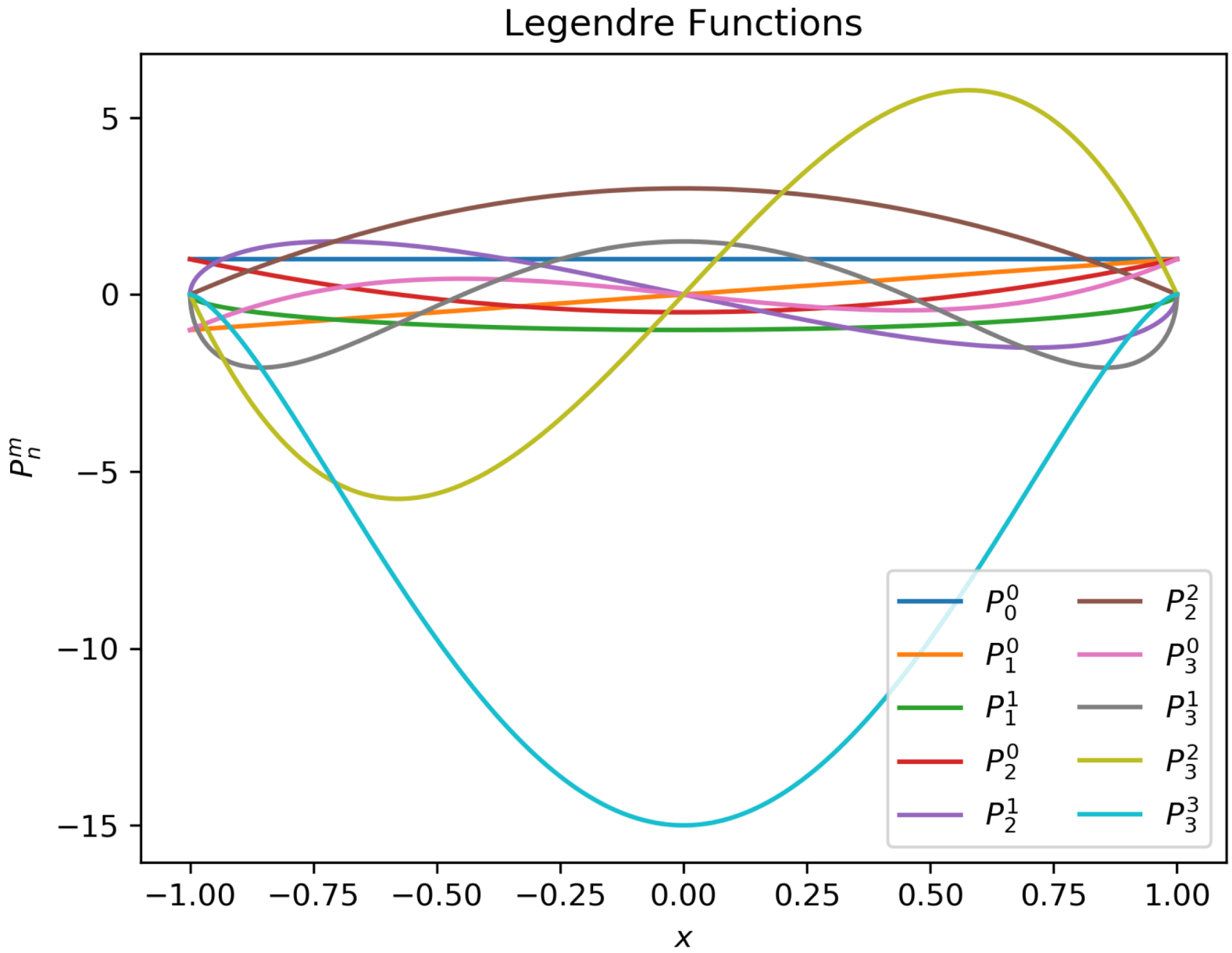

Bessel Functions
J_0
J_1
J_2
J_3
J_4
J_5
J_6
J_7
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
J_m
0
2
4
6
8
10
12
14
x

$$
\begin{aligned}
P_0^0(\mu) &= 1 \\
P_1^0(\mu) &= \mu \\
P_1^1(\mu) &= \sqrt{1-\mu^2} \\
P_2^0(\mu) &= \tfrac{1}{2}(3\mu^2-1) \\
P_2^1(\mu) &= 3\mu\sqrt{1-\mu^2} \\
P_2^2(\mu) &= 3(1-\mu^2) \\
P_3^0(\mu) &= \tfrac{1}{2}\mu(5\mu^2-3) \\
P_3^1(\mu) &= \tfrac{3}{2}(5\mu^2-1)\sqrt{1-\mu^2} \\
P_3^2(\mu) &= 15\mu(1-\mu^2) \\
P_3^3(\mu) &= 15(1-\mu^2)^{3/2}
\end{aligned}
$$

$$
\begin{aligned}
P_0^0(\mu) &= 1 \\
P_1^0(\mu) &= \mu = \cos\theta \\
P_1^1(\mu) &= \sqrt{1-\mu^2} = \sin\theta \\
P_2^0(\mu) &= \tfrac{1}{2}(3\mu^2-1) = \tfrac{1}{4}(1+3\cos 2\theta) \\
P_2^1(\mu) &= 3\mu\sqrt{1-\mu^2} = \tfrac{3}{2}\sin 2\theta \\
P_2^2(\mu) &= 3(1-\mu^2) = \tfrac{3}{2}(1-\cos 2\theta) \\
P_3^0(\mu) &= \tfrac{1}{2}\mu(5\mu^2-3) = \tfrac{1}{4}\cos\theta(\cos 2\theta - 1) \\
P_3^1(\mu) &= \tfrac{3}{2}(5\mu^2-1)\sqrt{1-\mu^2} = \tfrac{3}{4}(3+\cos 2\theta)\sin\theta \\
P_3^2(\mu) &= 15\mu(1-\mu^2) = \tfrac{15}{2}\cos\theta(1-\cos 2\theta) \\
P_3^3(\mu) &= 15(1-\mu^2)^{3/2} = \tfrac{15}{2}(1-\cos 2\theta)\sin\theta
\end{aligned}
$$


Legendre Polynomials
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
P_n
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00
x
P_0
P_1
P_2
P_3
P_4
P_5
P_6
P_7


Legendre Functions
5
0
−5
−10
−15
P_n^m
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00
x
P_0^0
P_1^0
P_1^1
P_2^0
P_2^1
P_2^2
P_3^0
P_3^1
P_3^2
P_3^3

Spherical Harmonics