

邊界元素法第五次作業

1. In the course, we have $U(s, x) = \ln(r)$ for 2-D Laplace equation, i. e.,

$$\nabla^2 U(s, x) = \delta(x - s)$$

Express $U(x, s)$, $T(x, s)$, $L(s, x)$ and $M(x, s)$ in component form. Also prove that

$$U(s, x) = U(x, s)$$

$$T(s, x) = L(x, s)$$

$$M(s, x) = M(x, s)$$

2. Plot the figures of $U(x_1, x_2; 0, 0)$ for $r = 0.1 \sim 1$.

3. Plot the figures of $T(x_1, x_2; 0, 0)$ for $r = 0.1 \sim 1$.

Setting $n(x) = (\cos(0^\circ), \sin(0^\circ))$

Setting $n(x) = (\cos(90^\circ), \sin(90^\circ))$

4. Plot the figures of $L(x_1, x_2; 0, 0)$ for $r = 0.1 \sim 1$.

Setting $n(s) = (\cos(0^\circ), \sin(0^\circ))$

Setting $n(s) = (\cos(90^\circ), \sin(90^\circ))$

5. Plot the figures of $M(x_1, x_2; 0, 0)$ for $r = 0.1 \sim 1$.

Setting $n(x) = (\cos(0^\circ), \sin(0^\circ))$ and $n(s) = (\cos(0^\circ), \sin(0^\circ))$.

Setting $n(x) = (\cos(0^\circ), \sin(0^\circ))$ and $n(s) = (\cos(90^\circ), \sin(90^\circ))$.