Table of contents

Introduction **3**

1 Approximation on the classes W_p^r and $\overline{W}_p^r$, $p = 1, \infty$, by the Poisson integrals **7**

1.1 Approximation of periodic functions by Poisson integrals: problem statement 7

1.2 Asymptotic decompositions of the upper bounds of approximations by Poisson integrals on the classes W_∞^r and W_1^r in the metrics of spaces C and L_1 14

1.3 The asymptotic decompositions of upper bounds of approximations by Poisson integrals on the classes $\overline{W}_\infty^r$ and $\overline{W}_1^r$ in the metrics of C and L_1 spaces 27

1.4 Exact values of the upper bounds of approximations by the Poisson integrals on the classes $\overline{W}_\infty^r$ 32

2 Approximation on the classes of (ψ, β)-differentiable functions by Poisson integrals **35**

2.1 Approximation of differentiable functions by linear methods of summation of their Fourier series: problem statement 35

2.2 Estimates of the upper bounds of approximation by Poisson integrals on the classes $C_{\beta,\infty}^\psi$ in the metric of space C 42

2.3 Estimate of the upper bounds of approximation by Poisson integrals on the classes $L_{\beta,\infty}^\psi$ in the metric of space L_1 . . 87

3 Approximation on the classes of locally summable functions defined on the real axis by linear methods of summation of their Fourier integrals **89**

3.1 Approximation of functions defined on the real axis by linear methods of summation of their Fourier integrals: problem statement 89
3.2 Estimate for upper bounds of approximation of functions from the classes $\hat{C}^{\psi}_{\beta,\infty}$ by operators $U_{\sigma}(\Lambda)$ in metric of the space $\hat{C}$ 96
3.3 Estimate for upper bounds of approximation of functions from the classes $\hat{L}^{\psi}_{\beta,1}$ by operators $U_{\sigma}(\Lambda)$ in metric of the space $\hat{L}_1$ 103

4 Approximation on the classes of locally summable functions defined on the real axis by Poisson operators 107
4.1 Approximation of locally summable functions defined on the real axis by Poisson operators: problem statement . . 107
4.2 Estimate of the upper bounds of approximation by Poisson operators on the classes $\hat{C}^{\psi}_{\beta,\infty}$ in the metric of space $\hat{C}$ . . 109
4.3 Estimate for upper bounds of approximations of functions from the classes $\hat{L}^{\psi}_{\beta,1}$ by their Poisson operators in metric of the space $\hat{L}_1$ 135

References 143