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*Группа 2539,*

*Вариант 27*

**Лабораторная работа 24**

**Код**

float y1 = 0.7;

float y2 = -0.5;

float h = 0.1;

for (float x = 0; x < 4.05; x += h) {

cout << "x = " << x << "; y(1) = " << y1 << "; y(2) = " << y2 << endl;

y1 = y1 + h \* cos(x + y1);

y2 = y2 + h \* sin(x - y2);

}

**Значения**

x = 0; y(1) = 0.7; y(2) = -0.5

x = 0.1; y(1) = 0.776484; y(2) = -0.452057

x = 0.2; y(1) = 0.84047; y(2) = -0.399613

x = 0.3; y(1) = 0.891051; y(2) = -0.343181

x = 0.4; y(1) = 0.92812; y(2) = -0.283207

x = 0.5; y(1) = 0.95215; y(2) = -0.220078

x = 0.6; y(1) = 0.963987; y(2) = -0.154134

x = 0.7; y(1) = 0.964668; y(2) = -0.0856682

x = 0.8; y(1) = 0.955294; y(2) = -0.0149385

x = 0.9; y(1) = 0.936949; y(2) = 0.0578299

x = 1; y(1) = 0.910647; y(2) = 0.132439

x = 1.1; y(1) = 0.877312; y(2) = 0.208714

x = 1.2; y(1) = 0.837771; y(2) = 0.286502

x = 1.3; y(1) = 0.792752; y(2) = 0.365667

x = 1.4; y(1) = 0.742895; y(2) = 0.446087

x = 1.5; y(1) = 0.688755; y(2) = 0.527656

x = 1.6; y(1) = 0.630818; y(2) = 0.610277

x = 1.7; y(1) = 0.569504; y(2) = 0.693864

x = 1.8; y(1) = 0.505181; y(2) = 0.778341

x = 1.9; y(1) = 0.438168; y(2) = 0.863639

x = 2; y(1) = 0.368744; y(2) = 0.949694

x = 2.1; y(1) = 0.297151; y(2) = 1.03645

x = 2.2; y(1) = 0.223605; y(2) = 1.12386

x = 2.3; y(1) = 0.148291; y(2) = 1.21187

x = 2.4; y(1) = 0.0713774; y(2) = 1.30045

x = 2.5; y(1) = -0.00699139; y(2) = 1.38955

x = 2.6; y(1) = -0.0866854; y(2) = 1.47914

x = 2.7; y(1) = -0.167589; y(2) = 1.56919

x = 2.8; y(1) = -0.249601; y(2) = 1.65966

x = 2.9; y(1) = -0.332629; y(2) = 1.75054

x = 3; y(1) = -0.41659; y(2) = 1.84179

x = 3.1; y(1) = -0.501412; y(2) = 1.9334

x = 3.2; y(1) = -0.587028; y(2) = 2.02534

x = 3.3; y(1) = -0.673378; y(2) = 2.1176

x = 3.4; y(1) = -0.760409; y(2) = 2.21015

x = 3.5; y(1) = -0.848071; y(2) = 2.30298

x = 3.6; y(1) = -0.93632; y(2) = 2.39608

x = 3.7; y(1) = -1.02512; y(2) = 2.48942

x = 3.8; y(1) = -1.11442; y(2) = 2.58301

x = 3.9; y(1) = -1.2042; y(2) = 2.67681

x = 4; y(1) = -1.29443; y(2) = 2.77083

x = 4.1; y(1) = -1.38507; y(2) = 2.86505

**Лабораторная работа 25**

**Код**

float f1(float x, float y) {

return sqrt(1 + x \* x + y \* y);

}

float f2(float x, float y) {

return sin(x \* y);

}

int main() {

freopen("output22.txt", "w", stdout);

float y1 = -2.0;

float y2 = 3.0;

float h = 0.1;

for (float x = -1.0; x < 1.05; x += h) {

cout << "x = " << x << "; y(1) = " << y1 << "; y(2) = " << y2 << endl;

float k1 = f1(x, y2);

float k2 = f1(x + h/2, y2 + h \* k1 / 2);

float k3 = f1(x + h/2, y2 + h \* k2 / 2);

float k4 = f1(x + h, y2 + h \* k3);

float y11 = y1;

y1 = y1 + h / 6 \* (k1 + 2 \* k2 + 2 \* k3 + k4);

k1 = f2(y11, y2);

k2 = f2(y11 + h/2, y2 + h \* k1 / 2);

k3 = f2(y11 + h/2, y2 + h \* k2 / 2);

k4 = f2(y11 + h, y2 + h \* k3);

y2 = y2 + h / 6 \* (k1 + 2 \* k2 + 2 \* k3 + k4);

}

}

**Значения**

x = -1; y(1) = -2; y(2) = 3

x = -0.9; y(1) = -1.65419; y(2) = 3.03878

x = -0.8; y(1) = -1.30737; y(2) = 3.13584

x = -0.7; y(1) = -0.953493; y(2) = 3.21077

x = -0.6; y(1) = -0.594299; y(2) = 3.18624

x = -0.5; y(1) = -0.239306; y(2) = 3.08774

x = -0.4; y(1) = 0.104394; y(2) = 3.03322

x = -0.3; y(1) = 0.441432; y(2) = 3.07848

x = -0.2; y(1) = 0.78205; y(2) = 3.17789

x = -0.1; y(1) = 1.13202; y(2) = 3.22345

x = 0.0; y(1) = 1.48626; y(2) = 3.16428

x = 0.1; y(1) = 1.83455; y(2) = 3.06464

x = 0.2; y(1) = 2.17315; y(2) = 3.01154

x = 0.3; y(1) = 2.50705; y(2) = 3.0551

x = 0.4; y(1) = 2.84624; y(2) = 3.15342

x = 0.5; y(1) = 3.19643; y(2) = 3.17773

x = 0.6; y(1) = 3.55053; y(2) = 3.10752

x = 0.7; y(1) = 3.89947; y(2) = 3.00754

x = 0.8; y(1) = 4.24073; y(2) = 2.93339

x = 0.9; y(1) = 4.57728; y(2) = 2.93456

x = 1; y(1) = 4.91673; y(2) = 3.02623