**ЛБ\_03 – Программирование циклических алгоритмов**

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| **Задание 1** | | **Задание 4** |
| 1  **procedure** p1;  **const**  x = 12.4;  **var**  p, k, y: real;  **begin**  k:= sin(3\*x) + cos(x);  y:= 0.5;  **while** y <= 4.7 **do**  **begin**  p:= tan(x) + sqr(y) / sqrt(k) - 16.3;  writeln(y:4:1, p:10:4);  y:= y + 0.7;  **end**;  **end**;  y P  0.5 -16.1170  1.2 -14.4467  1.9 -11.4007  2.6 -6.9792  3.3 -1.1821  4.0 5.9906  4.7 14.5389 | 2  **procedure** p2;  **var**  x, Z, P: real;  **begin**  x:= 3;  Writeln(' x', ' ', 'P');  **while** x <= 33 **do**  **begin**  Z:= sqr(x) \* x - 0.16 \* x;  P:= sin(x - 2) + x / 16 - Z;  writeln(x:3, P:12:4);  x:= x + 5  **end**;  **end**;  x P  3 -25.4910  8 -510.4994  13 -2195.1075  18 -5828.2829  23 -12161.0458  28 -21945.0074  33 -35930.0615 | **program** zad4;  **const**  k0 = 10e2;  R = 8.314;  **var**  Ea, k, T: real;  **begin**  T:= 700;  **repeat**  **if** T <= 720  **then**  Ea:= 60  **else**  **if** (T > 720) **and** (T <= 730)  **then**  Ea:= 59  **else**  Ea:= 57;  k:= k0 \* exp(-Ea / (R \* T));  writeln(T:3, k:10:2);  T:= T + 5  **until** T > 750  **end**.  700 989.74  705 989.82  710 989.89  715 989.96  720 990.03  725 990.26  730 990.33  735 990.72  740 990.78  745 990.84  750 990.90  **Задание 5**  **Program** zad5;  **var**  P, f1, f2, t: real;  **begin**  t:= 5;  **repeat**  f2:= 1250 / (sqrt(sqr(t + 273) + 1.08e3) - 307.6) - 1;  **if** t <= 11.4 **then**  f1:= sqrt(sqr(68.74 + 273) + 1.08e3) - 307.6 - 1  **else**  **if** (t > 11.4) **and** (t <= 37.8) **then**  f1:= sqrt(sqr(124.7 + 273) + 1.08e3) - 307.6 - 1  **else**  f1:= sqrt(sqr(134.7 + 273) + 1.08e3) - 307.6 - 1;  P:= exp(2.3 \* (2.68 \* (1 - f2 / f1) - 1));  writeln(t:3, f2:12:4, f1:12:4, ' ',P);  t:= t + 5  **until** t > 50  **end**.  5 173543.984711532  10 1003912.2858914  15 6223.84188727593  20 40386.518502084  25 2847386.738036  30 648300307560906  35 3.07488437593693E-16  40 0.00105949663933753  45 0.0890141375906871  50 0.565494616503712 |
| **Задание 2** | |
| 1  **procedure** p1;  **const**  k = 14;  **var**  z, x, c: real;  **begin**  x:= 6;  Writeln(' x', ' ', 'Z');  **repeat**  c:= (x + sqr(k) \* k) / (k + 1);  z:= tan(x) + 5 \* c;  writeln(x:4:1, z:10:4);  x:= x + 6;  **until** x > 36;  **end**;  x Z  6.0 916.3757  12.0 918.0308  18.0 919.5294  24.0 920.5318  30.0 918.2613  36.0 934.4171 | 2  **procedure** p2;  **const**  a = 2.1;  **var**  x, Z, b: real;  **begin**  x:= 10.2;  Writeln(' x', ' ', 'Z');  **repeat**  b:= x + cos(x);  z:= sin(x / a) + abs(a - b) / sqr(b);  writeln(x:3, z:12:4);  x:= x + 0.4  **until** x > 13  **end**;  x Z  10.2 -0.9075  10.6 -0.8666  11 -0.7914  11.4 -0.6846  11.8 -0.5499  12.2 -0.3922  12.6 -0.2172 |
| **Задание 3** | |
| 1  **procedure** p1;  **label**  1;  **const**  k = 2.8;  a = 13;  **var**  n, x, p: real;  **begin**  x:= 4;  Writeln(' x', ' ', 'N');  1:  P:= exp(k\*ln(a)) + exp(a);  N:= P + cos(x) + 5 \* sqr(x);  writeln(x:3, n:13:4);  x:= x + 2;  **if** x <= 18 **then goto** 1;  **end**;  x N  4 443808.0885  6 443909.7024  8 444048.5967  10 444227.9031  12 444449.5860  14 444708.8789  16 445007.7845  18 445349.4025 | 2  **procedure** p2;  **label**  1;  **const**  a = -1.6;  P = 46.82;  **var**  k, N, b: real;  **begin**  k:= 4.6;  Writeln(' k', ' ', 'N');  1:  b:= ln(P + 2.6 \* a);  N:= sin(k) / cos(k) + b \* a;  writeln(k:3, n:12:4);  k:= k + 0.2;  **if** k <= 5.8 **then goto** 1  **end**;  k N  4.6 2.8550  4.8 -17.3901  5 -9.3857  5.2 -7.8909  5.4 -7.2228  5.6 -6.8192 |