**CERO PIEZA, COORDENADAS, PROGRAMACION**

**SEBASTIAN BONELL VARGAS – SANDRA KATHERIN MORENO.**

**EJERCICIO LIBRE No. 1**

%

OBonell-Ka**t**herin

*(PROGRAM NAME - BONELL )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 12:32 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X15. Y23. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-5.** F0.

N114 X13. F.01

N116 G3 X15. Y21. R2.

N118 G1 X30.

N120 G2 X31. Y20. R1.

N122 G3 X35. Y16. R4.

N124 X39. Y20. R4.

N126 G2 X40. Y21. R1.

N128 G1 X70.

N130 G2 X71. Y20. R1.

N132 G1 Y0.

N134 G2 X70. Y-1. R1.

N136 G1 X50.

N138 G2 X49. Y0. R1.

N140 G3 X40. Y9. R9.

N142 G1 X30.

N144 G3 X21. Y0. R9.

N146 G2 X20. Y-1. R1.

N148 G1 X0.

N150 G2 X-1. Y0. R1.

N152 G1 Y20.

N154 G2 X0. Y21. R1.

N156 G1 X15.

N158 G3 X17. Y23. R2.

N160 G1 X15.

N162 Z.1 F0.

N164 G0 Z.25

N166 M5

N168 G91 G28 Z0.

N170 G28 X0. Y0. A0.

N172 M30

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**EJERCICIO LIBRE No. 2**

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OBonell-Ka**t**herin.

*(PROGRAM NAME - 84 )*

*(DATE=DD-MM-YY - 28-08-11 TIME=HH:MM - 00:39 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X18. Y25. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y27. F.01

N116 G3 X16. Y25. R2.

N118 G1 Y20.

N120 G2 X15. Y19. R1.

N122 G3 X11. Y15. R4.

N124 X15. Y11. R4.

N126 G2 X16. Y10. R1.

N128 G1 Y0.

N130 G2 X15. Y-1. R1.

N132 G1 X0.

N134 G2 X-1. Y0. R1.

N136 G1 Y30.

N138 G2 X0. Y31. R1.

N140 G1 X15.

N142 G2 X16. Y30. R1.

N144 G1 Y25.

N146 G3 X18. Y23. R2.

N148 G1 Y25.

N150 Z.1 F0.

N152 G0 Z.25

N154 M5

N156 G91 G28 Z0.

N158 G28 X0. Y0. A0.

N160 M30

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**EJERCICIO 1 DE LA GUIA**

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OBonell-Ka**t**herin

*(PROGRAM NAME - T )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 14:12 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X12.5 Y48. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 X10.5 F.01

N116 G3 X12.5 Y46. R2.

N118 G1 X25.

N120 G2 X46. Y25. R21.

N122 G1 Y-25.

N124 G2 X25. Y-46. R21.

N126 G1 X-25.

N128 G2 X-46. Y-25. R21.

N130 G1 Y25.

N132 G2 X-25. Y46. R21.

N134 G1 X0.

N136 X12.5

N138 G3 X14.5 Y48. R2.

N140 G1 X12.5

N142 Z.1 F0.

N144 G0 Z.25

N146 M5

N148 G91 G28 Z0.

N150 G28 X0. Y0. A0.

N152 M30

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**EJERCICIO 2 DE LA GUIA**

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OBonell-Ka**t**herin.

*(PROGRAM NAME - 58 )*

*(DATE=DD-MM-YY - 28-08-11 TIME=HH:MM - 00:27 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X103. Y30. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y32. F.01

N116 G3 X101. Y30. R2.

N118 G1 Y0.

N120 G2 X100. Y-1. R1.

N122 G1 X0.

N124 G2 X-1. Y0. R1.

N126 G1 Y60.

N128 G2 X0. Y61. R1.

N130 G1 X100.

N132 G2 X101. Y60. R1.

N134 G1 Y30.

N136 G3 X103. Y28. R2.

N138 G1 Y30.

N140 Z.1 F0.

N142 G0 Z.25

N144 M5

N146 G91 G28 Z0.

N148 G28 X0. Y0. A0.

N150 M01

*( TOOL - 2 DIA. OFF. - 2 LEN. - 2 DIA. - 2. )*

N152 **T2** M6

N154 G0 G90 G54 X23. Y30. A0. S0 M5

N156 G43 H2 Z.25

N158 Z.1

N160 G1 **Z-2.** F0.

N162 Y32. F.01

N164 G3 X21. Y30. R2.

N166 G1 Y11.

N168 X79.

N170 Y49.

N172 X21.

N174 Y30.

N176 G3 X23. Y28. R2.

N178 G1 Y30.

N180 Z.1 F0.

N182 G0 Z.25

N184 M5

N186 G91 G28 Z0.

N188 G28 X0. Y0. A0.

N190 M30

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**EJERCICIO No. 3 DE LA GUIA**

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OBonell Ka**t**herin

*(PROGRAM NAME - 2 )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 19:14 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X3. Y-10. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y-8. F.01

N116 G3 X1. Y-10. R2.

N118 G1 Y-19.0238

N120 G2 X20.9762 Y-39. R21.

N122 G1 X25.

N124 X84.

N126 Y-20.

N128 G2 X85. Y-19. R1.

N130 G3 X94. Y-10. R9.

N132 X85. Y-1. R9.

N134 G1 X50.

N136 G2 X49. Y0. R1.

N138 G3 X40. Y9. R9.

N140 X31. Y0. R9.

N142 G2 X30. Y-1. R1.

N144 G1 X1.

N146 Y-10.

N148 G3 X3. Y-12. R2.

N150 G1 Y-10.

N152 Z.1 F0.

N154 G0 Z.25

N156 M5

N158 G91 G28 Z0.

N160 G28 X0. Y0. A0.

N162 M30

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**EJERCICIO No. 4 DE LA GUIA**

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OBonell-Ka**t**herin.

*(PROGRAM NAME - 55 )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 23:26 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X7. Y15. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y13. F.01

N116 G3 X9. Y15. R2.

N118 G1 Y30.

N120 G2 X40. Y61. R31.

N122 G1 X70.

N124 G2 X71. Y60. R1.

N126 G1 Y40.

N128 G2 X70. Y39. R1.

N130 G1 X55.

N132 G3 X41. Y25. R14.

N134 X55. Y11. R14.

N136 G1 X70.

N138 G2 X71. Y10. R1.

N140 G1 Y0.

N142 G2 X70. Y-1. R1.

N144 G1 X10.

N146 G2 X9. Y0. R1.

N148 G1 Y15.

N150 G3 X7. Y17. R2.

N152 G1 Y15.

N154 Z.1 F0.

N156 G0 Z.25

N158 M5

N160 G91 G28 Z0.

N162 G28 X0. Y0. A0.

N164 M30

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**EJERCICIO No. 5 DE LA GUIA**

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OSebas**t**ián-Ka**t**herin.

*(PROGRAM NAME - 8 )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 23:36 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X12. Y35. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y33. F.01

N116 G3 X14. Y35. R2.

N118 G1 Y60.

N120 G2 X15. Y61. R1.

N122 G1 X95.

N124 G2 X96. Y60. R1.

N126 G3 X115. Y41. R19.

N128 G2 X116. Y40. R1.

N130 G1 Y30.

N132 G2 X95. Y9. R21.

N134 G1 X75.

N136 G2 X74. Y10. R1.

N138 G1 Y34.

N140 X66.

N142 Y10.

N144 G2 X65. Y9. R1.

N146 G1 X15.

N148 G2 X14. Y10. R1.

N150 G1 Y35.

N152 G3 X12. Y37. R2.

N154 G1 Y35.

N156 Z.1 F0.

N158 G0 Z.25

N160 M5

N162 G91 G28 Z0.

N164 G28 X0. Y0. A0.

N166 M30

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**EJERCICIO No. 6 DE LA GUIA**

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OSebas**t**ian-Ka**t**herin.

*(PROGRAM NAME - 9 )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 23:44 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X7. Y33. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y31. F.01

N116 G3 X9. Y33. R2.

N118 G1 Y58.

N120 G2 X10. Y59. R1.

N122 G1 X60.

N124 G2 X61. Y58. R1.

N126 G1 Y8.

N128 G2 X60. Y7. R1.

N130 G1 X10.

N132 G2 X9. Y8. R1.

N134 G1 Y33.

N136 G3 X7. Y35. R2.

N138 G1 Y33.

N140 Z.1 F0.

N142 G0 Z.25

N144 M5

N146 G91 G28 Z0.

N148 G28 X0. Y0. A0.

N150 M30

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**EJERCICIO No. 7 DE LA GUIA**

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OSebas**t**ian-Ka**t**herin

*(PROGRAM NAME - 7 )*

*(DATE=DD-MM-YY - 27-08-11 TIME=HH:MM - 23:52 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X7. Y30. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 Y28. F.01

N116 G3 X9. Y30. R2.

N118 G1 Y50.

N120 G2 X10. Y51. R1.

N122 G1 X50.

N124 G2 X50.7071 Y50.7071 R1.

N126 G1 X86.3137 Y15.1005

N128 G2 X85.6066 Y13.3934 R1.

N130 G1 X45.6066

N132 G2 X44.8995 Y13.6863 R1.

N134 G1 X34.5858 Y24.

N136 X21.

N138 Y10.

N140 G2 X20. Y9. R1.

N142 G1 X10.

N144 G2 X9. Y10. R1.

N146 G1 Y30.

N148 G3 X7. Y32. R2.

N150 G1 Y30.

N152 Z.1 F0.

N154 G0 Z.25

N156 M5

N158 G91 G28 Z0.

N160 G28 X0. Y0. A0.

N162 M30

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**EJERCICIO No. 8 DE LA GUIA**

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OBonell-Ka**t**herin

*(PROGRAM NAME - 21 )*

*(DATE=DD-MM-YY - 28-08-11 TIME=HH:MM - 00:14 )*

N100 G20

N102 G0 G17 G40 G49 G80 G90

*( TOOL - 1 DIA. OFF. - 1 LEN. - 1 DIA. - 2. )*

N104 **T1** M6

N106 G0 G90 G54 X25. Y33. A0. S0 M5

N108 G43 H1 Z.25

N110 Z.1

N112 G1 **Z-2.** F0.

N114 X23. F.01

N116 G3 X25. Y31. R2.

N118 G1 X50.

N120 G2 X51. Y30. R1.

N122 G1 Y-30.

N124 G2 X50. Y-31. R1.

N126 G1 X-50.

N128 G2 X-51. Y-30. R1.

N130 G1 Y30.

N132 G2 X-50. Y31. R1.

N134 G1 X0.

N136 X25.

N138 G3 X27. Y33. R2.

N140 G1 X25.

N142 Z.1 F0.

N144 G0 Z.25

N146 M5

N148 G91 G28 Z0.

N150 G28 X0. Y0. A0.

N152 M01

*( TOOL - 2 DIA. OFF. - 2 LEN. - 2 DIA. - 2. )*

N154 **T2** M6

N156 G0 G90 G54 X15. Y23. A0. S0 M5

N158 G43 H2 Z.25

N160 Z.1

N162 G1 **Z-2.** F0.

N164 X13. F.01

N166 G3 X15. Y21. R2.

N168 G1 X30.

N170 G2 X31. Y20. R1.

N172 G1 Y-20.

N174 G2 X30. Y-21. R1.

N176 G1 X-30.

N178 G2 X-31. Y-20. R1.

N180 G1 Y20.

N182 G2 X-30. Y21. R1.

N184 G1 X0.

N186 X15.

N188 G3 X17. Y23. R2.

N190 G1 X15.

N192 Z.1 F0.

N194 G0 Z.25

N196 M5

N198 G91 G28 Z0.

N200 G28 X0. Y0. A0.

N202 M30

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**COORDENADAS DE LAS PIEZAS**

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 0 – 0 > | < 0, 0 > |  |
| B | < 20 – 0 > | < 20, 0 > |  |
| C | < 50 – 0 > | < 30, 0 > |  |
| D | < 70 – 0 > | < 20, 0 > |  |
| E | < 70 – 20 > | < 0, 20 > |  |
| F | < 40 – 15 > | < -30, 0 > |  |
| G | < 30 – 15 > | < -10, 0 > |  |
| H | < 0 – 20 >  | < -30, 0 >  |  |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 0 – 0 > | < 0, 0 > |  |
| B | < 15 – 0 > | < 15, 0 > |  |
| C | < 15 – 10 > | < 0, 10 > |  |
| D | < 15 – 20 > | < 0, 10 > |  |
| E | < 15 – 30 > | < 0, 10 > |  |
| F | < 0 – 30 > | < -15, 0 >  |  |
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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < -25, 45 > | < 0, 45 > |  |
| B | < 25, 45 > | < 50, 0 >  |  |
| C | < 45, 25 > | < 20, -20 > |  |
| D | < 45, -25 > | < 0, -50 > |  |
| E | < 25, -45 > | < -20, -20 > |  |
| F | < -25, -45 > | < -50, 0 > |  |
| G | < -45, 25 > | < -20, 20 > |  |
| H | < -45, 25 > | < 0, 50 > |  |
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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 0, 0 > | < 0, 0 > |  |
| B | < 0, 60 > | < 0, 60 > |  |
| C | < 100, 60 > | < 100, 0 > |  |
| D | < 100, 0 > | < 0, -60 > |  |
| E | < 80, 50 > | < -20, 50 > |  |
| F | < 80, 10 > | < 0, -40 > |  |
| G | < 20, 50 > | < -60, 40 > |  |
| H | < 20, 10 > | < -40, 0 > |   |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 0, 0 > | < 0, 0 > |  |
| B | < 30, 0 > | < 30, 0 > |  |
| C | < 50, 0 > | < 10, 0 > |  |
| D | < 80, 0 > | < 75, 0 > |  |
| E | < 60, 20 > | < 0, -20 > |  |
| F | < 60, 40 > | < 0, -30 > |  |
| G | < 20, 40 > | < -40, 0 > |  |
| H | < 0, 20 > | < -25, 30 > |  |
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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 10, 30 > | < 10, 30 > |  |
| B | < 40, 60 > | < 30, 30 > |  |
| C | < 70, 60 > | < 30, 0 > |  |
| D | < 70, 40 > | < 0, -20 > |  |
| E | < 70, 10 > | < 0, -30 > |  |
| F | < 70, 0 > | < 0, -10> |  |
| G | < 10, 0 > | < -60, 0 > |  |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 15, 60 > | < 0, 50 > |  |
| B | < 95, 60 > | < 80, 0 > |  |
| C | < 115, 40 > | < 20, -20 > |  |
| D | < 95, 10 > | < -20, -30 > |  |
| E | < 75, 10 >  | < -20, 0 > |  |
| F | < 75, 35 > | < 0, 25 > |  |
| G | < 65, 35 > | < -10, 0 > |  |
| H | < 65, 10 > | < 0, -25 > |  |
| I | < 15, 10 > | < -50, 0 >  |  |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 10, 58 > | < 0, 50 > |  |
| B | < 60, 58 > | < 50, 0 > |  |
| C | < 10, 8 > | < 0, -50 > |  |
| D | < 60, 8 >  | < -50, 0 > |  |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < 10, 50 > | < 0, 40 > |  |
| B | < 50, 50 > | < 40, 0 > |  |
| C | < 70, 15 > | < 30, -35 > |  |
| D | < 40, 15 > | < -40, 0 > |  |
| E | < 35, 25 > | < -5, 10 > |  |
| F | < 20, 25 > | < -15, 0 > |  |
| G | < 20, 10 > | < 0, -15 > |  |
| H | < 10, 10 > | < -10, 0 > |  |

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| **PUNTO** | **COORD. ABSOLUTAS** | **COORD. RELATIVAS** | **COORD. POLARES** |
| A | < -50, -30 > | < -80, -10 > |  |
| B | < -50, 30 > | < 0, 60 > |  |
| C | < 50, 30 > | < 100, 0 > |  |
| D | < 50, -30 > | < 0, -60 > |  |
| E | <-30, 20 > | < -80, 50 > |  |
| F | < 30, 20 > | < 60, 0 >  |  |
| G | < -30, -20 > | < -60, -40 > |  |
| H | < 30, -20 >  | < 60, 0 >  |  |