

Complete the following questions by hand before you go to the computer lab. Show your work where appropriate and write the final answer in the space provided.

1. Factor  $x^2 - 7x + 6$ .

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2. Factor  $x^3 - 6x^2 + 11x - 6$ .

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3. Expand  $(2x - 3)(3x + 5)$  by multiplying out.

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4. Expand  $(x - a)^4$  by multiplying out.

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5. Expand  $\sin 2a$  by using trigonometric identities.

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6. Expand  $\sin(a + b)$  by using trigonometric identities.

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7. Simplify  $\frac{1}{x^2 - 1} - \frac{1}{x^2}$ .

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8. Simplify  $\frac{1}{1 + \frac{1}{1+x}}$ .

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9. Solve  $7x + 3 = 40$ .

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10. Solve  $x^2 - 6x - 2 = 0$ . Give exact, simplified answers (no decimals).

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From the Math 100 index screen, click on “Computer Algebra.” Read the text explaining the commands. Type and execute the commands as you go. Continue until you reach the end of the sheet. Be sure to execute all commands in sequence. At the end, you may look at the optional examples or start on the last command line after the optional examples to answer the following questions. For questions 1-7 give the exact Maple command syntax and then write the answer (output).

1. Use the `factor` command to factor  $x^3 - 6x^2 + 11x - 6$ .

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2. Use the `expand` command to multiply out or expand  $(x - 2)^2(x + 1)(x + 3)$ .

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3. Use the `expand` command to multiply out or expand  $\sin(a + b)$ .

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4. Use the `expand` command and then the `factor` command to factor the expansion of  $\sin 3a$ .

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5. Use the `simplify` command to simplify  $\frac{1}{1 + \frac{1}{1+x}}$ .

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6. Use the `solve` command to solve  $x^2 - 4x - 45 = 0$  for  $x$ .

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7. Use the `solve` command to solve  $ax^2 + bx + c = 0$  for  $x$ .

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8. Does Maple know how to solve the cubic equation  $ax^3 + bx^2 + cx + d = 0$  for  $x$ ? Briefly explain.

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