

MAS051 — Example Sheet 1

To be handed in: Friday, October 4, 2002

Remember to give your Tutorial Group, along with your name, on the assignment.

Only the *asterisked* (starred) questions are to be handed in. You should attempt all the questions, however; they are intended to help you learn the material, and you can only do this by working through problems. For this reason, you should *not* use a calculator for any of these problems.

(1) Evaluate the following:

(a) $3 \times (1 + 2)$ (b)* $(1 + 5) 6$ (c) $4 (-3)$

(d) $(-3) \times 2$ (e) $2 (-3 - 4)$ (f)* $1 + 2^2 - 3$

(g) $(3 + 1)^3 - 7^2$ (h) $-(3 - 1)^2$ (i)* $3 ((2 - 1) \times 4)$

(2) Expand the following and simplify if possible:

(a) $2(x + y)$ (b) $-x(2 - y)$ (c) $(x + y)(x - y)$

(d)* $(x - y)^2$ (e) $2x(x^2 - x + 1)$ (f)* $(x + 2y - 1)(3x - 2)$

(3) Express the following as improper fractions in their lowest form:

(a) $\frac{8}{12}$ (b) $\frac{1}{6} + \frac{3}{4}$ (c)* $\frac{11}{24} - \frac{1}{3}$

(d)* $\frac{3}{8} \times \frac{4}{9}$ (e)* $\frac{3}{7} \div \frac{9}{14}$ (f) $(\frac{3}{7}) / (\frac{9}{14})$

(g)* $\frac{\frac{3}{4} - \frac{1}{3}}{\frac{2}{3} + \frac{1}{12}}$ (h) $\frac{1}{2} - \frac{1}{3} - \frac{1}{4}$ (i) $(2 - \frac{1}{2})^3 \div (2 + \frac{1}{2})^2$

(j)* $\frac{9 - 2 \times 3}{(4 + \frac{1}{2}) \times 2}$ (k) $\frac{1}{\frac{1}{2}} + \frac{1}{\frac{2}{3}}$ (l) $\frac{3 \div \frac{4}{5}}{\frac{5}{6}}$

(4) Simplify, giving your answer as the power of a natural number:

(a) $2^{11} \times 2^3$ (b)* $3^7 \times 5^7$ (c) $(7^2)^4$

(d)* $13^3 13^7$ (e) $101^{11} 3^{11}$ (f)* $(53^6)^7$