Math 102 Exam #1 Key (Fall 2010)

1a. 3,508,020
1b. 1,976
1c. 629,448
1d. 596
1e. 704,278
1f. $(3 \times 60) + 22 = 202$
1g. $(8 \times 60) + 9 = 489$
1h. 8,502
1i. 4,090
1j. $(5 \times 360) + (0 \times 20) + 0 = 1800$
1k. $(9 \times 7200) + (3 \times 360) + 18 = 65,898$

2a. 

2b. MCDXCII

2c. $\overline{\text{XCVIII}}$CDXLIX

2d. $\psi o \zeta$

2e. $\iota \Qoppa \iota \gamma \phi \mu \mathrm{f}$

2f.
六
百
三
十
八

2g.
七
千
零
二
十
九

2h. 

2i.

2j. 

2k. 

3a. $(4 \times 5) + 3 = 23$

3b. $2^9 + 2^6 + 2^4 + 2^2 + 2 = 598$

3c. $(7 \times 12^3) + (10 \times 12^2) + 2 = 13,538$

3d. $(3{\times}8^1){+}(2{\times}8^0){+}(3{\times}8^{-1}){+}(5{\times}8^{-2}) = 26.453125$

4a. $197 = (5 \times 6^2) + (2 \times 6) + 5 = 525_6$

4b. $478 = (3 \times 12^2) + (3 \times 12^1) + 10 = 33\mathrm{A}_{12}$

4c. $(1{\times}16^3){+}(6{\times}16^2){+}(15{\times}16){+}15 = 16\mathrm{FF}_{16}$

4d. $(2 \times 5^2) + (4 \times 5^1) + 3 + (1 \times 5^{-1}) = 243.1_5$

4e. $(1 \times 8^{-1}) + (3 \times 8^{-2}) + (1 \times 8^{-3}) = 0.131_8$

5a. 1351_6

5b. $\mathrm{D91C}_{16}$

5c. 100001100_2

5d. $32\mathrm{A}0_{12}$

5e. We get $1166_8 + 42350_8 = 43536_8$

5f. We get $330\mathrm{E}_{16} + 51\mathrm{B}0_{16} = 84\mathrm{BE}_{16}$

6a. Quotient is 43_5, with no remainder.

6b. 45_7, R1

6c. $45.1111... = 45.\bar{1}_7$ (see solution to #7a in supplementary assignment)

6d. 163.74_8 (see solution to #7c in supplementary assignment)

7a. $0010\ 0101\ 1011\ 0111_2 = 25\mathrm{B}7_{16}$

7b. $4\mathrm{C}96_{16} = 0100\ 1100\ 1001\ 0110_2$