

Math 170
Homework 10
Due December 4, 2008

Name _____

TA: _____ Section Number: _____

- (1) Suppose A is a symbol representing ten. What is $AA1$ base 11 expressed base 4?
- (2) What is 123.12 base 4 in base 10?
- (3) Express $102.\overline{102}$ base 3 as a fraction (in lowest terms) base 10?
- (4) What is $[3 : 1, 2, 3, 4]$ as a fraction in lowest terms?
- (5) What does $[4 : \overline{5}, 4]$ equal?
- (6) Which of the following are rational numbers?
- $\sqrt{2^2 \cdot 3^2 \cdot 5^2}$
 - $\sqrt[3]{2^3 \cdot 3^2 \cdot 5}$
 - $\sqrt{2^4 \cdot 3^3 \cdot 5^2 \cdot 11}$
 - $\sqrt[3]{2^6 \cdot 3^9 \cdot 7^3}$
- (7) Let $R_{n+1} = 2R_n^2 - 3R_n - 1$ be a mathematical model with $R_0 = 1$. What is R_3 ?
- (8) Let $R'_{n+1} = 2(R'_n)^3 - 7R'_n$ be a mathematical model. How many equilibrium points does R'_n have and what are they?
- (9) Consider the mathematical model $M_{n+1} = M_n^2 + (2 - i)$ with $M_0 = 0$. What is M_3 ?
- (10) What are the values of x such that $x^2 + 4x + 5 = 0$?
- (11) What does $(3 - i) \times (2 + i)$ equal? What about $(3 - i) + (2 + i)$?

- (12) What does $\frac{3-i}{2+i}$ equal? What about $(3-i) - (2+i)$?
- (13) Let $M_{n+1} = (M_n)^2 - 2$ be a mathematical model. How many real equilibrium points does M_n have? What (if any) are they? How many other complex equilibrium points does M_n have? What (if any) are they?
- (14) Let $F_1 = 1, F_2 = 1$ and $F_{n+2} = F_{n+1} + F_n$ describe the Fibonacci numbers. What does $F_8 + F_{10}$ equal?