NAME ______________________________ Rec. Instr. ______________________________

Signature __________________________ Rec. Day/Time ______________________________

College Algebra – Exam 1
February 8, 2005

Show all work for full credit. No notes or books are allowed. You should use your graphing calculator on problem 10. For the other problems, you should use your calculator only to check your answers. The exam is worth 100 points.

(10 pts) 1. Convert to exponential notation and simplify.

(a) $\sqrt[3]{\sqrt{11}}\sqrt[3]{\sqrt[4]{7}}$

(b) $\sqrt[3]{ab^2}\sqrt{ab}$

(10 pts) 2. Multiply and simplify.

(a) $(3x-2)(x^2+4x+11)$

(b) $(2x^5+7)^2$

(10 pts) 3. (a)] $\sqrt[4]{81}-\sqrt[4]{16}$

(b) $\sqrt[3]{64x^6y^9}$

(5 pts) 4. Rationalize the denominator. $\dfrac{20}{\sqrt{7}-\sqrt{3}}$

(17 pts) 5. Simplify

(a) (5 pts) $\left(\dfrac{7}{9}-\dfrac{5}{6}\right) \div \left(\dfrac{5}{6}-\dfrac{5}{8}\right)$

(b) (12 pts) $\dfrac{6}{x+3} - \dfrac{x+4}{9-x^2} + \dfrac{2x-3}{9-6x+x^2}$

(12 pts) 6. Factor completely

(a) (5 pts) $a^4 - 4^4$

(b) (7 pts) $6x^6 - 12x^4 + 24x^2$

(6 pts) 7. Find the least common denominator, subtract, and simplify.

$$\frac{3}{x(x+2)(x-2)} - \frac{6x}{x^3(x+2)}$$

(6 pts) 8. Find the y-intercept of the line which passes through the point $(1, 2)$ and which is perpendicular to the line $5x + 3y = 1$.

(10 pts) 9.

A diameter of a circle is the line segment between the two points $(-3, -8)$ and $(5, 2)$.

(a) (4 pts)

Find the center of the circle.

(b) (6 pts)

Give an equation for the circle.

(14 pts) 10. Let $y = 2x^4 + 5x^3 + 2x^2 - 11x - 4$.

(a) (7 pts)

Use your graphing calculator to find the graph of the function using the window $-3 \leq x \leq 3$ and $-10 \leq y \leq 10$.

(b) Use your graphing calculator to find one of the x-intercepts (x-coordinate of the point with $y = 0$). Briefly describe what method you use (which buttons you push).