

Exam 2, Math 1111, Section BG, Kersey, Oct 24, 2003

Instructions: No calculators. Show all work. Answers without supporting work will receive no credit. You do not need to simplify answers unless asked specifically to do so. Do your own work! – the minimum penalty for academic misconduct is a zero on the exam. There are 105 possible points.

1. (4pts) Solve $4x^2 + 4x - 1 = 0$ (use the quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$)

2. (4pts) Solve $4x^2 + 4x + 1 = 0$ (use the quadratic formula)

3. (4pts) Solve $4x^2 + x + 4 = 0$ (use the quadratic formula)

4. (7pts) Find the intersection of the two lines $2x - 3y = -2$ and $4x - y = -6$.

5. (7pts) Solve $x = \frac{3}{x} + \frac{1}{2}$. (find the common denominator)

6. (7pts) $|x| = x^2 + x - 3$ (recall: $|x| = a$ if $x = a$ or $x = -a$)

7. (7pts) Solve $|4 - 7x| \leq 3$. (recall: $|x| < a$ if $-a < x < a$)

8. (7pts) Solve $|2x - 4| > 3$. (recall: $|x| > a$ if $x > a$ or $x < -a$)

9. (7pts) Solve $x^2 - 3x + 2 < 0$. (factor and use a number line)

10. (7pts) Solve $\frac{(3-2x)(x+2)}{x+3} > 0$. (use a number line)

11. (7pts) Solve $\sqrt{x+1} - 3x = 1$. (isolate the square root and square both sides)

12. (7pts) $(x+2)^{3/2} = 27$.

13. (7pts) Divide $2x^3 + 4x^2 - 20x + 7$ by $x + 2$. (use synthetic or long division)

14. (7pts) Divide $3x^2 - 7x$ by $3x - 1$. (use long division)

15. (10pts) Graph the quadratic function $f(x) = x^2 + 5x + 1$. To do so, first complete the square to express in vertex form $f(x) = a(x-h)^2 + k$. Then, identify the vertex. Also find the x and y intercepts.