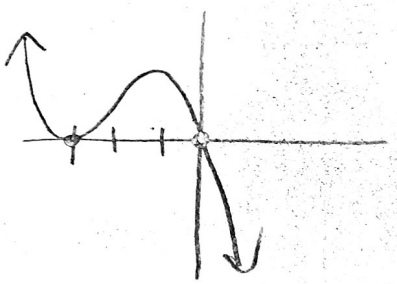
HN Math III
Unit 3, Day 3 HOMEWORK

Name KEY
Date _____ Period _____

1. Use the following polynomial to answer the following questions: $f(x) = -2x^3 - 12x^2 - 18x$.
   a. State the degree. 3
   b. State the leading coefficient. -2
   c. State the *y*-intercept. 0
   d. Write the polynomial in factored form. $y = -2x(x+3)(x+3)$
   e. State the zeros and their multiplicity. $x = 0$ $x = -3$ (mult. 2)
   f. State the end behavior. $x \to \infty, y \to -\infty$ $x \to -\infty, y \to \infty$
   g. Sketch a graph of *f(x)*.



Solve the following quadratics. If necessary, leave answers in simplest radical form.

2. $x^2 + x + 1 = 0$

$x = \frac{-1 \pm i\sqrt{3}}{2}$

3. $x^2 + 7x - 30 = 0$

$x = -10$ $x = 3$

4. $2x^2 - 7x + 5 = 0$

$x = \frac{5}{2}$ $x = 1$

5. $-x^2 + 4x - 5 = 0$

$x = 2 \pm i$

6. $8x^2 - 4x + 5 = 0$

$x = \frac{1 \pm 3i}{4}$

7. $-5x^2 + 12x = 8$

$x = \frac{6 \pm 2i}{5}$

8. $5x^2 + 9x = -4$

$x = -\frac{4}{5}$ $x = -1$

9. $2x^2 - 6x = -7$

$x = \frac{3 \pm i\sqrt{5}}{2}$