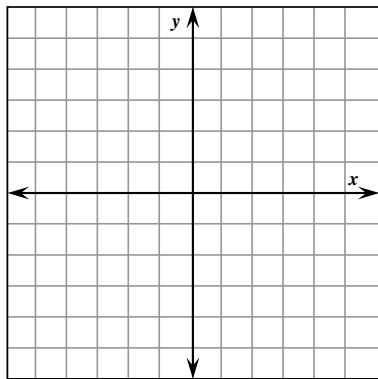


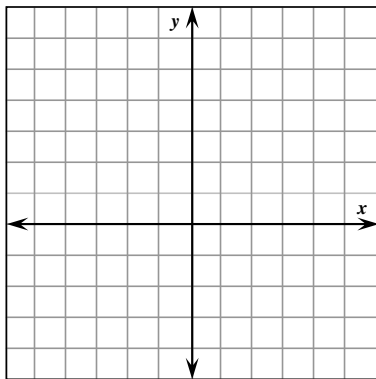
**Show All Work for Credit!**

Graph each of the following. (4 points each)

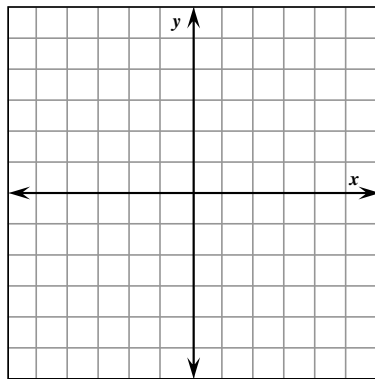
1.  $y = 2|x + 1| - 4$



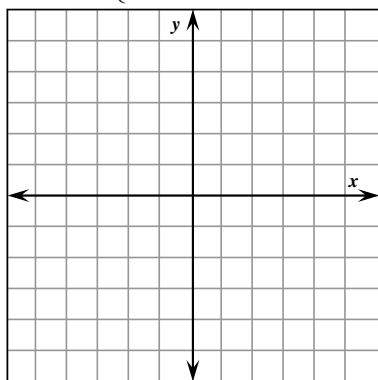
2.  $y = -x^3 + 2$



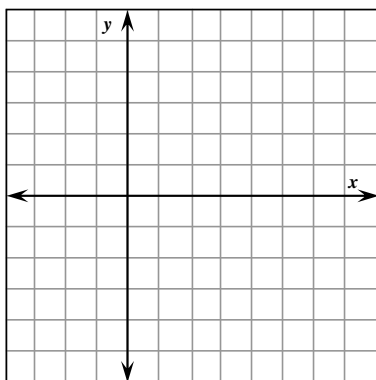
3.  $y = -[2x] - 1$



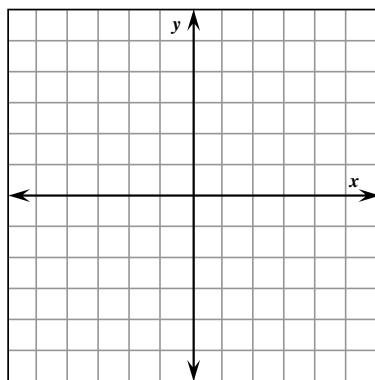
4.  $f(x) = \begin{cases} 2x + 1; & x < 1 \\ x^2 + 1; & x \geq 1 \end{cases}$



5.  $y = -\sqrt{x - 3} + 2$



6.  $y = \frac{2}{x - 2} - 1$



7. Find the domain for  $g(x) = \sqrt{4 - x^2}$  in Interval Notation: (4 pts) \_\_\_\_\_

8. For the following function:  $y = \frac{x - 2}{x^2 - 3x + 2}$ . Find: (3 pts each)

a. Hole(s): \_\_\_\_\_

b. Vertical Asymptote: \_\_\_\_\_

c. Horizontal Asymptote: \_\_\_\_\_

d. Domain: \_\_\_\_\_

e. x - intercept: \_\_\_\_\_

f. y - intercept: \_\_\_\_\_

9. Find the following for  $f(x) = x^4 - 2x^3 - 6x^2 + 22x - 15$ . (4 pts each)

\_\_\_\_\_ # of positive real zeros    \_\_\_\_\_ # of negative real zeros    \_\_\_\_\_ # of imaginary zeros

\_\_\_\_\_ State all possible Rational Roots. (2 pts)

\_\_\_\_\_ Find all of the roots. (8 pts)

10. Solve the following inequality  $x^4 - 3x^3 - 11x^2 + 3x + 10 < 0$ . \_\_\_\_\_ (6 pts.)

Show work. Answer has to be in Interval Notation. Use sign chart after finding roots.

11. Determine  $k$  so that  $x + 4$  has a remainder of  $-10$  in  $f(x) = 2x^3 + 4x^2 + kx + 8$ . \_\_\_\_\_ (4 pts)

12. Sketch  $f(x) = -(x+1)^3(x-4)(x-2)$ . (4 pts.ea)

Degree: \_\_\_\_\_

End behavior: \_\_\_\_\_

Zeros: \_\_\_\_\_

y- int: \_\_\_\_\_

