





Name: \_\_\_\_\_

(e) Factor completely (If not factorable write NF):  $x^3 - 2x^2 + 4x - 8$

(f) Simplify the complex fraction:  $\frac{\frac{x}{x+2} - \frac{4}{x+2}}{\frac{6}{x+2} - 3}$

(g) Rationalize the denominator:  $\frac{3 - \sqrt{x}}{3 + \sqrt{x}}$

(h) Simplify:  $(1 - 2i)(1 + 2i) - 3i^4$

(i) Let  $c$  be a real number. Find the value of  $c$  that makes the factoring of the polynomial true:  
 $2x^2 - cx - 6 = (2x - 3)(x + 2)$

2. Simplify:  $\frac{4x(2x-1)(-2) + 3x(2x)^2x}{2x}$  (5 pts)

3. Solve each of the following equations: (25 pts)

(a)  $5 = x^2 - 4x$

(b)  $\sqrt{x-2} = x-2$

(c)  $\frac{x}{x^2-1} + \frac{1}{2(x+1)} = \frac{x-1}{x^2-1}$

(d) Solve for  $P$ :  $3 - 14P = RP - 1$

(e) Solve for  $r$ :  $I = \frac{S}{4r^2}$

4. Solve the following inequalities. Justify your answers by using a number line or sign chart. Answers without full justification will not receive full credit. Express all answers in interval notation. (20 pts)

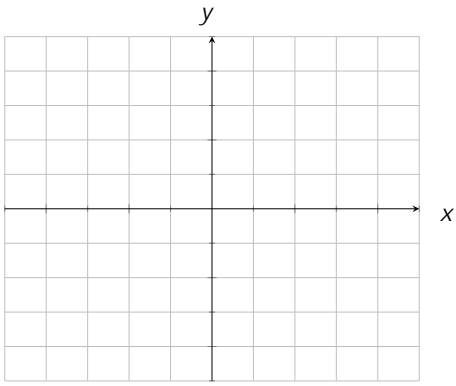
(a)  $2 + 5x < x - 1$

(b)  $x(x - 2)^2(x + 2) < 0$

(c)  $2x + \frac{1}{2} < \frac{1}{2}$

(d)  $\frac{x+3}{x} \quad 0+3$

7. Graph the line that has slope  $m = \frac{1}{3}$  and crosses through the point  $\left(\frac{3}{2}; 2\right)$ . Be sure to label relevant values on the axes. (4 pts)



8.