

Prob.	1	2	3	4	5	6	7	8	Total
Value	7	7	14	16	14	22	13	7	100
Points									

"100% of the people who give 110% do not understand math." – Demetri Martin

Recall, it is your job to demonstrate the extent to which you understand each problem, this means *write mathematics*. A good write-up includes: connecting your work, proper notation, and an explanation of steps as you see necessary.

1. Simplify the expression (completely).

$$\frac{3x^4}{(-2x)^{-2}} - (3x^3)^2$$

2. Find the solution set for the inequality, write your answer using **interval notation**.

$$\frac{x}{4} - \frac{1}{2} \geq \frac{x}{2} - 1$$

3. Find the solution set for each inequality, write your answer using **interval notation** when relevant .

(a) $2x > 5x - 15$ and $7x > 2x + 10$

(b) $3x + 5 \leq 2$ or $5x - 7 \geq 3$

4. Find the solution set for each inequality, write your answer using interval notation when relevant.

(a) $|2x + 2| + 9 < 16$

(b) $2 \left| 3 - \frac{3x}{4} \right| - 9 \geq 9$

5. Find the solution set for each inequality, write your answer using interval notation when relevant.

(a) $-2|5 - x| < -6$

(b) $|3y - 1| + 10 = 25$

6. Factor completely.

(a) $(x + 2)(x + 3) + (x - 1)(x + 3)$

(b) $15x^{2n} - 25x^n$

(c) $x^3 - 3x^2 + 4x - 12$

7. Multiply the polynomial.

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

(b) $(3x^n - 1)(x^n + 2)$

8. If $f(x) = 3x^2 - 2x + 1$ evaluate and **simplify**:

$$f(a + h) - f(a) =$$