1. (3 pts each) Simplify each expression. There should be no negative exponents in your answers.
   (a) 36
   (b) \(8^{2a+1}\)
   (c) \(\frac{b^2c^2}{3^{2a^4}}\)

2. (4 pts each) Simplify each expression. There should be no negative exponents in your answers. You do not have to multiply out terms like \(2^5\).
   (a) \(-2x^3y^4\)
   (b) \(\frac{n^4}{3m^5}\)

3. (3 pts each) Perform the indicated operation.
   (a) \(4x^2 - y^2 + 4y - 4\)
   (b) \(p^{6r} + q^3\)

4. (4 pts each) Factor each polynomial completely. If a polynomial is prime, say so.
   (a) \(7x(x - 1)(x + 1)(x^2 + 1)\)
   (b) \((3x^y - 1)(9x^{2y} + 3x^y + 1)\)

5. (5 pts each) Solve by factoring. State the solution set.
   (a) \(\{0, \frac{1}{3}, -\frac{3}{4}\}\)
   (b) \(\{1, -1, -5\}\)

6. (5 pts) What is the domain of \(\frac{3x - 2}{x^3 - x^2}\)? State your answer in set notation and in interval notation.
   Set notation: \(\{x \mid x \neq 0, 1\}\)
7. (4 pts each) Perform the indicated operations, and express your answer in its simplest form (i.e., all fractions should be reduced).

(a) \( \frac{2x^2}{x - 2} \)

(b) \( \frac{2}{x - y} \)

(c) \( \frac{z - 2}{(z + 1)^2} \)

8. (4 pts each) Simplify the following complex fractions. You can leave common denominators in factored form (i.e., don’t bother multiplying out denominators).

(a) \( \frac{7x + 1}{-2x - 8} \)

(b) \( \frac{a^4 - b^3}{a^4b + ab^3} \)