PDEV 100
Exam 1
Review Sheet
Solutions

This review sheet is intended to remind you of the concepts that you are expected to understand for the exam. It is by no means a complete representation of what could be on the exam. You are responsible for everything discussed in the notes, on labs and in the suggested homework exercises. You should work these on a separate piece of paper.

1. Answer the following questions about the sets $A = \{1, 3, 5, 7, 9\}$, $B = \{1, 2, 3, 5, 6, 8\}$, and $C = \{2, 4, 6, 8, 10\}$.

   (a) $\{1, 3, 5\}$
   (b) $\{1, 2, 3, 5, 6, 7, 8, 9\}$
   (c) $\emptyset$
   (d) Find $\{2, 6, 8\}$
   (e) Find $\{5, 7, 9\}$

2. Simplify the following. Remember your order of operations.

   (a) -39 (b) 206 (c) 189 (d) -5

3. Simplify the following fractions using prime factorization.

   (a) $\frac{10}{3}$ (b) $\frac{28}{5}$ (c) $\frac{1}{14}$

4. Perform the following operations and simplify your answers.

   (a) $\frac{2}{15}$ (b) 4 (c) $\frac{13}{30}$ (d) $\frac{-5}{12}$ (e) 1 (f) $\frac{26}{45}$

5. Evaluate the following absolute value expressions.

   (a) 30 (b) $\frac{2}{3}$ (c) -10

6. Simplify the following.

   (a) $4x^5$
   (b) $200y^5$
   (c) $\frac{x}{y^7}$
   (d) $\frac{6z^3}{y^2}$
   (e) $\frac{x^{16}}{25y^{12}z^4}$
   (f) ab^{11}

7. Simplify the following.

   (a) $x^3 + 2x^2 - 3x + 3$
   (b) $3x^5 + x^4 + 8x^3 - 14x^2 + 5x - 7$
   (c) $6x^8 + 24x^7 - 2x^5 - 4x^4 - x^3 + x^2 + 21x + 9$
   (d) $\frac{1}{6}x^2 - \frac{1}{2}x + \frac{3}{4}$
   (e) $x^2 + x - 12$
   (f) $2x^2 - 13x - 7$
   (g) $4z^2 - 12zw + 9w^2$
   (h) $x^3 + 3x^2 + 3x + 1$
   (i) $2x^3 + 11x^2 + 11x - 4$
   (j) $x^4 - 1$

8. Factor the following polynomials completely.

   (a) $(xy - a)(x - y)$
   (b) $(5ab - 1)(2x + 1)$
   (c) $(x - 9)(x + 3)$
   (d) $(x + 11)(x - 2)$
   (e) $3x^2(x - 7)(x - 3)$
   (f) $(2x + 1)(x + 7)$
   (g) $(3x + 2)(3x + 1)$
   (h) $(x + 3)(2x - 3)$
   (i) $2(2x - 1)(3x + 5)$
   (j) $x(5x + 4)(x - 2)$
   (k) $(x - 2)(x^2 + 2x + 4)$
   (l) $(3x - 2)(3x + 2)$
   (m) $\left(x - \frac{1}{4}\right)\left(x + \frac{1}{4}\right)$
   (n) $(x - 2)(x + 2)(x^2 + 4)$
   (o) $(2x + 3)(4x^2 - 6x + 9)$