

**BRONX COMMUNITY COLLEGE**  
of the City University of New York

**DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE**

**MTH6 Review Sheet II**

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1. Factor completely:

(a)  $3b^2 + 12b$

(b)  $12x^3y - 3y^3$

(c)  $9x^2y^3 - 3x^2y^5$

(d)  $25x^4 - 16y^2$

(e)  $15ax + 9xy - 10ay - 6y^2$

(f)  $x^2 - 3x - 10$

(g)  $2x^2 - x - 6$

(h)  $3x^2 - 2x + 5$

(i)  $4x^2 - 12xy + 9y^2$

(j)  $-3x^2 - xy + 10y^2$

(k)  $2x^4 - 2x^3 - 12x^2$

2. Solve:

(a)  $3x^2 = 27$

(b)  $6x^2 = 3x$

(c)  $x^2 - 8x + 16 = 0$

(d)  $x^2 - 8x - 20 = 0$

(e)  $2x^2 + x - 6 = 0$

(f)  $x^2 + 2x = 15$

3. Determine the values for which the rational expression is undefined.

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

(b)  $\frac{x^2 - 4}{6}$

(c)  $\frac{x^2 - 3x + 2}{2x^2 - 7x + 6}$

4. Perform the indicated operations and simplify:

$$(a) \frac{6x^3 - 6x}{3x^3 + 3x^2}$$

$$(b) \frac{4yz}{5a^2} \cdot \frac{10a^5}{12xy} \div \frac{6}{3a}$$

$$(c) \frac{4x^2 + x - 5}{x^3 - x^2} \cdot \frac{x^2 + 2x}{4x^2 + 13x + 10}$$

$$(d) \frac{x^2 - 7x + 12}{x^2 - 4x + 4} \div (x - 3)$$

$$(e) \frac{2x^2 - 8y^2}{2xy - 4y^2} \div \frac{4x^2 - 16y^2}{2x^2 - 4xy}$$

$$(f) \frac{x^2 + x - 12}{x^2 - 9} \div \frac{x^2 + 4x}{x^2 + 5x + 6}$$

$$(g) \frac{2}{5x^2y} + \frac{1}{x} + 2$$

$$(h) \frac{2}{2x + 3} + \frac{1}{x + 5}$$

$$(i) \frac{2x^2 - 10}{2x^2 + 17x + 21} - \frac{x + 4}{x + 7}$$

$$(j) \frac{\frac{7}{2} - \frac{3}{b^2}}{\frac{ab}{2} + \frac{7}{b^2}}$$

$$(k) \frac{\frac{2}{x^2 - 4}}{\frac{5}{x + 2} - \frac{3}{x - 2}}$$

5. Solve:

$$(a) \frac{2}{x} + 7 = \frac{7x}{x + 5}$$

$$(b) \frac{3}{2x - 1} + \frac{1}{x} = 4$$

$$(c) \frac{x}{x - 4} + \frac{1}{x + 1} = \frac{2x}{x^2 - 3x - 4}$$

$$(d) \frac{2}{x + 2} + \frac{15}{x^2 - 4x - 12} = \frac{3}{x - 6}$$