

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

MTH6 Review Sheet II

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) $\frac{\frac{7}{2} - \frac{3}{b^2}}{\frac{a^2}{2} + \frac{1}{b^2}}$ (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) $\frac{2}{x + 2} + \frac{15}{x^2 - 4x - 12} = \frac{3}{x - 6}$