

MPM 2DI EXAM REVIEW – Chapter 5: Quadratic Expressions

1. Expand and simplify.

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

(b) $3(3x^2 - 2y^2) - (4x + y)^2$

2. Factor completely, if possible.

(a) $10xy - 25x$

(b) $6x^3y^3 - 4x^2y^4 + 2xy^5$

(c) $x^2 - 13x + 40$

(d) $x^2 + 7x + 12$

(e) $9x^2 + 81y^2$

(f) $4m^2 - 3m - 10$

(g) $a^2 - 81b^2$

(h) $x^2 - x - 30$

(i) $2z(x - 3y) + 7(x - 3y)$

(j) $2d^2 + 4d - 3cd - 6c$

(k) $x^2 + 7x + 22$

(l) $15x^2 - 5x - 10$

(m) $21a^2 - ab - 2b^2$

(n) $15x^2 - 19xy + 6y^2$

(o) $7x^2 - 63$

(p) $2x^3 - 10x^2 + 8x$

3. For the parabola defined by $y = (x - 3)^2 - 16$.

(a) What are the coordinates of the vertex?

(b) Convert the relation into standard form.

(c) Through factoring, determine the x-intercepts (zeroes) of the parabola.

4. A quadratic relation has the formula $y = x^2 - 3x - 18$

(a) Identify the zeroes of the relation.

(b) Find the equation of the axis of symmetry.

(c) Find the vertex.

(d) Graph the relation. Ensure 5 ordered pairs are labeled. *Graph paper is needed.

FINAL ANSWERS

1. (a) $2x^2 + 8xy - 15y^2$ (b) $-7x^2 - 8xy - 7y^2$
2. (a) $5x(2y - 5)$ (b) $2xy^3(3x^2 - 2xy + y^2)$ (c) $(x - 8)(x - 5)$ (d) $(x + 4)(x + 3)$
- (e) $9(x^2 + 9y^2)$ * You cannot factor this further. Do you know why? (f) $(m - 2)(4m + 5)$
- (g) $(a - 9b)(a + 9b)$ (h) $(x - 6)(x + 5)$ (i) $(2z + 7)(x - 3y)$ (j) $(d + 2)(2d - 3c)$
- (k) cannot be factored (l) $5(x - 1)(3x + 2)$ (m) $(3a - b)(7a + 2b)$ (n) $(5x - 3y)(3x - 2y)$
- (o) $7(x - 3)(x + 3)$ (p) $2x(x - 4)(x - 1)$
3. (a) vertex(3, -16)
- (b) $y = x^2 - 6x - 7$
- (c) $y = (x - 7)(x + 1)$. Hence, the zeroes are $x = 7$ and $x = -1$
4. (a) $x = 6$ and $x = -3$
- (b) $x = 1\frac{1}{2}$ * don't forget that it must begin with "x ="
- (c) $(1\frac{1}{2}, -20\frac{1}{4})$
- (d)

