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FOM 10 – Polynomial Unit Test **

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- Show all of your work. **Circle** your final answers -

1. Expand: (1 mark)

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

$24x^5y^3 - 18x^3y^4 + 12x^6y^5$

2. Expand and simplify: (2 marks)

$$(3x - 5y)(3x + 5y)$$

$9x^2 - 15xy + 15xy - 25y^2$

$9x^2 - 25y^2$

3. Expand: (2 marks)

$$(-2x^2y)(-3xy^3)(2x^5y^3 - 3x^2y)$$

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

$12x^8y^7 - 18x^5y^5$

4. Expand and simplify: (3 marks)

$$(2x - 5)^2$$

$(2x - 5)(2x - 5)$

$4x^2 - 10x - 10x + 25$

$4x^2 - 20x + 25$

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5. Expand and simplify: (2 marks)

$$(p+4)(2p^2-6p-3)$$

$2p^3 - 6p^2 - 3p + 8p^2 - 24p - 12$

$2p^3 + 2p^2 - 27p - 12$

6. Factor completely: (1 mark)

$$16p^8q^3 - 4p^6q^5 + 12p^3q^6$$

$4p^3q^3(4p^5 - p^3q^2 + 3q^3)$

7. Factor completely: (2 marks)

$$-6x^3 - 12x^2 + 48x$$

$-6x(x^2 + 2x - 8)$

$-6x(x+4)(x-2)$

$\_\_ \times \_\_ = -8$

$\_\_ + \_\_ = 2$

8. Factor completely: (2 marks)

$$4x^2 - 49$$

$(2x-7)(2x+7)$

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9. Factor completely: (3 marks)

$$3x^2 - 5x - 2$$

$3x^2 - 6x + x - 2$

$3x(x-2) + 1(x-2)$

$(3x+1)(x-2)$

$-6 \times 1 = -6$

$-6 + 1 = -5$

10. Factor completely: (2 marks)

$$-20x + 2x^2 + 48$$

$2x^2 - 20x + 48$

$2(x^2 - 10x + 24)$

$2(x-4)(x-6)$

11. Factor completely: (3 marks)

$$6x^2 + 15x - 9$$

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

$3(2x^2 + 6x - 1x - 3)$

$3(2x(x+3) - 1(x+3)) = 3(x+3)(2x-1)$

$+6 \times -1 = +6$

$+6 + -1 = +5$

12. Factor completely: (3 marks)

$$2x^4 - 32y^4$$

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

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

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

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13. Factor completely: (3 marks)

$$8x^2 + 8x + 2$$

$2(4x^2+4x+1)$

$2(4x^2+2x+2x+1)$

$2(2x(2x+1)+1(2x+1))$

$2(2x+1)(2x+1)$

$2(2x+1)^2$

__ × __ = 4

__ + __ = 4

BONUS QUESTION – 1 mark

Factor completely:

$$6x^4 - 57x^2 + 27$$

$3(2x^4-19x^2+9)$

$3(2x^4-18x^2-x^2+9)$

$3(2x^2(x^2-9)-1(x^2-9))$

$3(2x^2-1)(x^2-9)$

$3(2x^2-1)(x+3)(x-3)$

$-18 \times -1 = -18$

$-18 + -1 = -19$