

Name: KEYRead all directions and problems carefully! Show all appropriate work for credit.

1. Factor the following polynomials completely.

$12b^2 + 11b - 15$

$$12b^2 + 20b - 9b - 15 \quad \begin{array}{r} -180 \\ + \\ 11 \end{array}$$

$$4b(3b+5) - 3(3b+5) \quad 20(-9) \quad 20(+9)$$

$$\boxed{(3b+5)(4b-3)}$$

$64x^3 - 125 = (4x)^3 - (5)^3$

$$(4x-5)((4x)^2 + (4x)(5) + 5^2)$$

$$\boxed{(4x-5)(16x^2 + 20x + 25)}$$

$2a^2b + 24ab + 72b$

$$2b(a^2 + 12a + 36) \quad \begin{array}{r} 36 \\ + \\ 12 \\ \hline 6(6) \end{array}$$

$$\boxed{\begin{array}{l} 2b(a+6)(a+6) \\ \text{or} \\ 2b(a+6)^2 \end{array}}$$

$81x^5y - 3x^2y$

$$3x^2y(27x^3 - 1)$$

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

$$\boxed{3x^2y(3x-1)(9x^2+3x+1)}$$

$9t^2 + 24t + 16$

$$9t^2 + 12t + 12t + 16 \quad \begin{array}{r} 144 \\ + \\ 24 \end{array}$$

$$3t(3t+4) + 4(3t+4)$$

$$3t(3t+4) + 4(3t+4)$$

$$\boxed{(3t+4)(3t+4) \text{ or } (3t+4)^2}$$

$48x^4y - 3x^2y$

$$3x^2y(16x^2 - 1)$$

$$3x^2y((4x)^2 - 1^2)$$

$$\boxed{3x^2y(4x-1)(4x+1)}$$

$3ax^2 - 6axy + 3abx - 6aby$

$$3a[x^2 - 2xy + bx - 2by]$$

$$3a[x(x-2y) + b(x-2y)]$$

$$\boxed{3a(x-2y)(x+b)}$$

$9a^2b^2 + 3a^2b - 4a^2b^2$

$$\boxed{a^2b[9b+3-4b]}$$