Quiz 1

Solutions given without showing work may earn a zero. This quiz is open note, and you may use a calculator.

Completely factor each of the following polynomials. **Don't forget to look for a GCF first!**

Problem 1. **[3 points]** $27x^2 - 3$

Problem 2. **[3 points]** $9x^2 + 12x + 4$

Problem 3. **[4 points]** $3x^3 + 9x^2 + 8x + 24$

① $27x^2 - 3 = 3(9x^2 - 1) = 3((3x)^2 - 1^2)$

GCF = 3

$A^2 - B^2 = (A+B)(A-B)$

$A = 3x,\ B = 1$

$= \boxed{3(3x+1)(3x-1)}$

② $9x^2 + 12x + 4 = 9x^2 + 6x + 6x + 4$

36, 6, 6, +12

$= (9x^2 + 6x) + (6x + 4)$

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

$= (3x+2)(3x+2) = \boxed{(3x+2)^2}$

Ck: $(3x+2)(3x+2)$

$= 9x^2 + 6x + 6x + 4$

$= 9x^2 + 12x + 4$

③ $3x^3 + 9x^2 + 8x + 24 = (3x^3 + 9x^2) + (8x + 24)$

$= 3x^2(x+3) + 8(x+3) = \boxed{(x+3)(3x^2+8)}$

Ck: $3x^3 + 8x + 9x^2 + 24$