Name: Sarah Nunez Date: 3/27

Course: College Algebra Nyack College

College Algebra

Preliminary Assessment #2

Directions: Provide complete responses to each question. Make sure to show your work and factor completely.

1. $x^2 - 36 = 6 \cdot 6$

$= (x-6)(x+6)$

Check: $(x-6)(x+6)$

$= x^2 + 6x - 6x - 36$

$= x^2 - 36$

2. $25 - x^2$

$-(x+25) = -(x+5)(x+5)$

$= (x-5)(x+5)$

aka

$(5-x)(5+x)$

3. $x^2 - 10x + 25$

$= (x-5)(x-5)$

Check: $(x-5)(x-5)$

$= x^2 - 5x - 5x + 25$

$= x^2 - 10x + 25$

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4. $x^2 - 10x + 24$

$= (x-6)(x-4)$

$= x = 6 \quad x = 4$

5. $4x^2 + 16x + 16$

$= (2x+4)(2x+4)$

$= 4x^2 + 8x + 8x + 16$

$= 4x^2 + 16x + 16$

$2x + 4 = 0$

$-4 \quad -4$

$\frac{2x = -4}{2}$

$x = 2$

6. $4a^2 + 53a + 28$

$ax^2 + bx + c = 0$

$\frac{x = -b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-53 \pm \sqrt{53^2 - 4(4)(28)}}{2(4)} = \frac{-53 + \sqrt{2{,}809 - 448}}{8} = \frac{\sqrt{2{,}361}}{8} = \frac{-53 - \sqrt{2361}}{8}$

$= -12.698$

$= \frac{-53 + \sqrt{2361}}{8} = -0.551$

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7. $9x^2 + 66x + 21$

$= 3(3x^2 + 22x + 7)$

$= 3(3x+1)(x+7)$

8. $16x^2 + 60x + 100$

$= 4(4x^2 + 15x + 25)$

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9. $3x^3 - 4x^2 + 9x - 12$

$3x^3 - 4x^2 + 9x - 12 = 0$

$= x^2(3x-4) + 9x - 12 = 0$

$x^2(3x-4) + 3(3x-12) = 0$

$3x - 4 = 0$

$\frac{3x = 4}{3}$

$x = \frac{4}{3}$

$x^2 + 3 = 0$

$-3 \quad -3$

$\sqrt{x^2} = \sqrt{-3}$

$x = \sqrt{-3}$

10. $5x^3 - 10x^2 + 3x - 6$

$5x^3 - 10x^2 + 3x - 6 = 0$

$5x^2(x-2)\ 3(x-2) = 0$

$= \boxed{(x-2)(5x^2+3)}$

$x - 2 = 0$

$+2 \quad +2$

$= x = 2$

$x = 2$