40/40 = 100

- Extra Credit: 18 pts
- 58/40 = 145 possible

Foundations for College Algebra
University of North Georgia
Fall 2016
Quiz # 8

Factor the following completely.

1. $x^2 - 16x + 48$ $ac = 48$ $b = -16$ $-12 \mid -4$

$x^2 - 12x - 4x + 48$

$x(x-12) - 4(x-12)$

$\boxed{(x-12)(x-4)}$

Check

$(x-12)(x-4)$

$x^2 - 4x - 12x + 48$

$x^2 - 16x + 48$ ✓

2. $x^2 - 4x - 5$ $ac = -5$ $b = -4$ $-5 \mid +1$

$x^2 - 5x + x - 5$

$x(x-5) + 1(x-5)$

$\boxed{(x-5)(x+1)}$

$(x-5)(x+1)$

$x^2 + x - 5x - 5$

$x^2 - 4x - 5$ ✓

3. $6x^2 + 17x + 7$ $ac = 42$ $b = 17$ $+14 \mid +3$

$6x^2 + 14x + 3x + 7$

$2x(3x+7) + 1(3x+7)$

$\boxed{(3x+7)(2x+1)}$

$(3x+7)(2x+1)$

$6x^2 + 3x + 14x + 7$

$6x^2 + 17x + 7$ ✓

4. $25x^2 - 4$ $a = 5x$ $b = 2$

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

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

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

$25x^2 - 4$ ✓

5. $27x^3 + 8$ $a = 3x$ $b = 2$

$(3x+2)(9x^2 - 6x + 4)$

$(3x+2)(9x^2 - 6x + 4)$

$27x^3 - 18x^2 + 12x + 18x^2 - 12x + 8$

$27x^3 + 8$ ✓

Solve each equation using factoring.

6. $x^2 = -7x + 30$

$x^2 + 7x - 30 = 0$ $\quad ac = -30$ $\quad b = 7$ $\quad \frac{+ \mid -}{10 \mid 3}$

$x^2 + 10x - 3x - 30 = 0$

$x(x+10) - 3(x+10)$

$(x+10)(x-3)$

① $x + 10 = 0$ $\quad \boxed{x = -10}$

② $x - 3 = 0$ $\quad \boxed{x = 3}$

$(-10)^2 = -7(-10) + 30$

$100 = 70 + 30$ ✓

$(3)^2 = -7(3) + 30$

$9 = -21 + 30$ ✓

7. $60 - x^2 = 11x$

$0 = x^2 + 11x - 60$ $\quad ac = -60$ $\quad b = 11$ $\quad \frac{+ \mid -}{15 \mid 4}$

$0 = x^2 + 15x - 4x - 60$

$0 = x(x+15) - 4(x+15)$

$0 = (x+15)(x-4)$

① $x + 15 = 0$ $\quad \boxed{x = -15}$

② $x - 4 = 0$ $\quad \boxed{x = 4}$

$60 - (-15)^2 = 11(-15)$

$60 - 225 = -165$

$-165 = -165$ ✓

$60 - (4)^2 = 11(4)$

$60 - 16 = 44$

$44 = 44$ ✓

8. $x^2 - 1 = 0$ $\quad a = x \quad b = 1$

$(x+1)(x-1) = 0$

$x = \pm 1$

$(1)^2 - 1 = 0$

$1 - 1 = 0$ ✓

$(-1)^2 - 1 = 0$

$1 - 1 = 0$ ✓

9. State the ***Zero Product Property.***

$ab = 0$

10. Show that $(x-4)(x-21) = x^2 - 25x + 84$

$x^2 - 21x - 4x + 84$

$x^2 - 25x + 84$ ✓

$x^2 - 25x + 84$ $\quad ac = 84$

$x^2 - 21x - 4x + 84$ $\quad b = -25$ $\quad \frac{- \mid -}{21 \mid 4}$

$x(x-21) - 4(x-21)$

$(x-21)(x-4)$ ✓

BONUS (5 points) Factor the following completely.

$14x^2 + 11x - 15$ $\quad ac = -210$ $\quad b = 11$

+	−		
15	4	−60	✓
16	5	−80	✓
18	7	−126	✓
22	11	−242	✓
21	10	−210	✓

$14x^2 + 21x - 10x - 15$

$7x(2x+3) - 5(2x+3)$

$\boxed{(2x+3)(7x-5)}$

$(2x+3)(7x-5)$

$14x^2 - 10x + 21x - 15$

$14x^2 + 11x - 15$ ✓