Math 1201

Final Exam Review Factors and Products

Section One: Circle the correct solution.

1. For the expression $x^2 - \boxed{?}x - 12$ to be factorable, give the value for $\boxed{?}$.

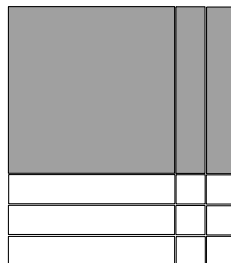   (A)   2   (B)   3   (C)   4   (D)   6

2. A polynomial is represented by the tiles shown below. What are the factors of the polynomial? (Consider the shaded tiles positive!!)

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

   (B) $(x+3)(x+2)$
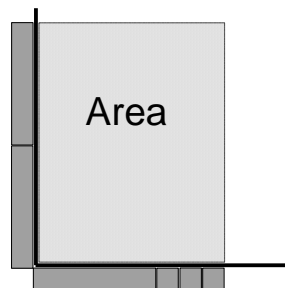
   (C) $(x-3)(x-2)$

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

3. Two students set up some algebra tiles to help model a product. Which expression represents the modeled area?(Shaded tiles are positive)

   (A) $x^2 + 6x$

   (B) $2x^2 + 3x$

   (C) $x^2 + 3x$

   (D) $2x^2 + 6x$

4. Multiply: $(2x-3)(3x+4)$.

   (A) $6x^2 - x - 12$ (B) $6x^2 - 12$

   (C) $6x^2 - 17x - 12$ (D) $6x^2 + 2x - 12$

5. A rectangle has dimensions $(2x - 3)$ and $(3x + 1)$. Find the area of the rectangle.

   (A) $5x - 2$ (B) $6x^2 - 7x - 3$

   (C) $6x^2 + 7x - 3$ (D) $5x^2 - 7x - 3$

6. Which is the product of $(x+3)$ and $(3x-2)$?

   (A) $3x^2 - 6$ (B) $4x^2 - 6$

   (C) $3x^2 + 7x - 6$ (D) $4x^2 + 7x - 6$

7. The area of a rectangle is $x^2 - 2x - 24$. What are the dimensions?

   (A) $(x + 4)$ by $(x - 6)$ (B) $(x - 4)$ by $(x + 6)$

   (C) $(x + 4)$ by $(x + 6)$ (D) $(x - 4)$ by $(x - 6)$

8. Factor completely: $4x^2 - 25$
   (A) $(4x - 25)(4x + 25)$
   (B) $(2x - 5)(2x - 5)$
   (C) $(2x - 5)(2x + 5)$
   (D) $(2x + 5)(2x + 5)$

9. Factor completely: $2x^2 + 4x - 6$
   (A) $(x + 3)(x - 1)$
   (B) $(2x - 2)(x + 3)$
   (C) $2(x^2 + 2x - 3)$
   (D) $2(x - 1)(x + 3)$

10. Expand and simplify: $(x + 2)(2x^2 - x + 5)$
    (A) $2x^3 + 3x^2 + 3x + 10$
    (B) $2x^3 - x^2 + 5x + 10$
    (C) $2x^3 + 5x^2 + 7x + 10$
    (D) $2x^3 + 3x^2 + 7x + 10$

Section Two: Answer all questions. You MUST show your work to get full credit.

1. Expand and simplify using the method of your choice.
   (A) $(2x - 1)(x + 3) - (3x + 2)(2x + 5)$

   (B) $(x^2 - 2x + 5)(2x^2 + 4x - 1)$

2. Factor fully each of the following expressions:
   (A) $x^2 - 5x - 14$

   (B) $8x^2 + 10x - 3$

   (C) $6x^2 - xy - 2y^2$

   (D) $81x^4 - 16y^4$

3. The shaded region represents a picture frame. Find an expression for
   the area of the shaded region in simplest form.