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Date: \_\_\_\_\_

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Course: Math 1111-Summer 2018

Assignment: Section P.5 Homework

1. Factor the greatest common factor from the polynomial.

$$18x^2 + 27x$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $18x^2 + 27x = 9x(2x+3)$   
 B. The polynomial is prime.

2. Factor out the greatest common factor in the expression.

$$x^2(x-6) + 16(x-6)$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $x^2(x-6) + 16(x-6) = (x-6)(x^2+16)$   
 B. The polynomial is prime.

3. Factor by grouping.

$$x^3 - 4x^2 + 8x - 32$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $x^3 - 4x^2 + 8x - 32 = x^2(x-4) + 8(x-4) = (x^2+8)(x-4)$   
 B. The polynomial is prime.

4. Factor the given polynomial.

$$x^2 + 18x + 77$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A.  $x^2 + 18x + 77 = x^2 + 7x + 11x + 77 = x(x+7) + 11(x+7) = (x+7)(x+11)$   
 B. The polynomial is prime. *OR*  $x^2 + 18x + 77 = (x+7)(x+11)$

5. Factor the given polynomial.

$$x^2 - 13x + 40$$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

- A.  $x^2 - 13x + 40 = (x-5)(x-8)$   
 B. The polynomial is prime.

6. Factor the trinomial, or state that the trinomial is prime.

$$3a^2 - 8a - 28$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $3a^2 - 8a - 28 = (3a-14)(a+2)$
- B. The polynomial is prime.

7. Factor the trinomial, or state that the trinomial is prime.

$$6y^2 + 25y + 11$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $6y^2 + 25y + 11 = (3y+11)(2y+1)$
- B. The polynomial is prime.

8. Factor the trinomial, or state that the trinomial is prime.

$$28y^2 + 5y + 8$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $28y^2 + 5y + 8 = (+)(+)$  (Factor completely.)
- B. The polynomial is prime.
- The polynomial is prime  
Not factorable.*

9. Factor the trinomial, or state that the trinomial is prime.

$$2a^2 - 9ab - 45b^2$$

Select the correct choice below and fill in any answer box within your choice.

- A.  $2a^2 - 9ab - 45b^2 = (2a-15b)(a+3b)$
- B. The polynomial is prime.

10. Factor the difference of two squares.

$$25x^2 - 81$$

*Difference of two squares*

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $25x^2 - 81 = (5x)^2 - (9)^2 = (5x-9)(5x+9)$
- B. The polynomial is prime.

11. Factor the difference of two squares.

$$16x^4 - 81$$

Difference of two squares!

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $16x^4 - 81 = (4x^2)^2 - (9)^2 = (4x^2 - 9)(4x^2 + 9)$   
(Factor completely.)
- B. The polynomial is prime.
- $$= (2x - 3)(2x + 3)(4x^2 + 9)$$

12. Factor the perfect square.

$$16x^2 - 8x + 1$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $16x^2 - 8x + 1 = (4x - 1)(4x - 1) = (4x - 1)^2$ .
- B. The polynomial is prime.

13. Factor using the formula for the sum or difference of two cubes. Difference of two cubes

$$125x^3 - 64 = (5x)^3 - (4)^3 = (5x - 4) = (5x)^2 + (5x)(4) + (4)^2$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $125x^3 - 64 = (5x - 4)(25x^2 - 20x + 16)$ .
- B. The polynomial is prime.

14. Factor using the formula for the sum or difference of two cubes. Sum of two cubes

$$125x^3 + 27$$

$$= (5x)^3 + (3)^3 = (5x + 3)(2x)^2 - (5x)(3) + 3^2$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $125x^3 + 27 = (5x + 3)(4x^2 - 15x + 9)$ .
- B. The polynomial is prime.

15. Factor the trinomial completely.

$$3x^2 + 15x + 18$$

Select the correct choice below and fill in any answer boxes within your choice.

- A.  $3x^2 + 15x + 18 = 3(x^2 + 5x + 6) = 3(x + 2)(x + 3)$   
(Factor completely.)
- B. The polynomial is prime.

16. Factor completely, or state that the polynomial is prime.

$$x^3 - 2x^2 - 25x + 50$$

Factoring by Grouping.

Select the correct choice below and, if necessary, fill in the answer box within your choice.

A.  $x^3 - 2x^2 - 25x + 50 = x^2(x-2) - 25(x-2) = (x-2)(x^2-25) = (x-2)(x^2-5^2)$

B. The polynomial is prime.

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

17. Factor completely, or state that the polynomial is prime.

$$2x^3 - 50x$$

Select the correct choice below and fill in any answer boxes within your choice.

A.  $2x^3 - 50x = 2x(x^2-25) = 2x(x-5)(x+5)$

B. The polynomial is prime.

Difference of two squares

18. Factor the expression completely, or state that the polynomial is prime.

$$x^3 + 8x^2 - 4x - 32$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A.  $x^3 + 8x^2 - 4x - 32 = x^2(x+8) - 4(x+8) = (x+8)(x^2-4) = (x+8)(x^2-2^2)$

B. The polynomial is prime.

$$= (x+8)(x-2)(x+2)$$

Difference of two squares

19. Factor completely, or state that the polynomial is prime. Check factorization using multiplication.

$$20y^4 - 125y^2$$

Select the correct choice below and fill in any answer boxes within your choice.

A.  $20y^4 - 125y^2 = 5y^2(4y^2 - 25) = 5y^2((2y)^2 - 5^2)$   
(Factor completely.)

B. The polynomial is prime.

$$= 5y^2(2y-5)(2y+5)$$

1. A.  $18x^2 + 27x = \underline{9x(2x + 3)}$

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2. A.  $x^2(x - 6) + 16(x - 6) = \underline{(x^2 + 16)(x - 6)}$

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3. A.  $x^3 - 4x^2 + 8x - 32 = \underline{(x - 4)(x^2 + 8)}$

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4. A.  $x^2 + 18x + 77 = \underline{(x + 11)(x + 7)}$

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5. A.  $x^2 - 13x + 40 = \underline{(x - 8)(x - 5)}$

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6. A.  $3a^2 - 8a - 28 = \underline{(3a - 14)(a + 2)}$

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7. A.  $6y^2 + 25y + 11 = \underline{(2y + 1)(3y + 11)}$

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8. B. The polynomial is prime.

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9. A.  $2a^2 - 9ab - 45b^2 = \underline{(a + 3b)(2a - 15b)}$

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10. A.  $25x^2 - 81 = \underline{(5x + 9)(5x - 9)}$

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11. A.  $16x^4 - 81 = \underline{(4x^2 + 9)(2x - 3)(2x + 3)}$  (Factor completely.)

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12. A.  $16x^2 - 8x + 1 = \underline{(4x - 1)^2}$

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13. A.  $125x^3 - 64 = \underline{(5x - 4)(25x^2 + 20x + 16)}$

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14. A.  $125x^3 + 27 = \underline{(5x + 3)(25x^2 - 15x + 9)}$

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15. A.  $3x^2 + 15x + 18 = \underline{3(x + 2)(x + 3)}$  (Factor completely.)

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16. A.  $x^3 - 2x^2 - 25x + 50 = \underline{(x - 2)(x + 5)(x - 5)}$

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17. A.  $2x^3 - 50x = \underline{2x(x+5)(x-5)}$

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18. A.  $x^3 + 8x^2 - 4x - 32 = \underline{(x+8)(x+2)(x-2)}$

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19. A.  $20y^4 - 125y^2 = \underline{5y^2(2y+5)(2y-5)}$  (Factor completely.)

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