

Name: _____

Test 2: Unit 3

1. Simplify the expression given below.

$$(10x^3 - 3) + (-5x^2 - 3x + 6)$$

- ☒ A. $10x^3 - 5x^2 - 3x + 3$ $10x^3 - 5x^2 - 3x + 3$
- ☐ B. $10x^3 - 4x^2 - 2x + 3$
- ☒ C. $5x^3 - 3x + 3$
- ☒ D. $10x^3 + 5x^2 + 3x + 9$

3. Simplify the following expression.

$$(3x - 8)(3x + 8) = 9x^2 + 24x - 24x - 64$$

- ☐ A. $9x^2 - 16$
- ☐ B. $9x^2 + 48x - 64$
- ☐ C. $9x^2 - 48x - 64$
- ☒ D. $9x^2 - 64$

2. Simplify the following polynomial expression.

$$(8x^2 - 7x + 2) + (3x^2 - 9x - 6)$$

$$8x^2 - 7x + 2 + 3x^2 - 9x - 6$$

$$11x^2 - 16x - 4$$

4. Simplify the following expression.

$$(4x + 1)^2$$

- ☒ A. $16x^2 + 4x + 1$
- ☒ B. $16x^2 + 8x + 1$
- ☒ C. $16x^2 + 1$
- ☒ D. $16x^2 - 8x + 1$

5. Simplify: $(8x^2 - 4x - 6)(3x + 6)$

- ☐ A. $24x^3 + 36x^2 - 6x - 36$
- ☒ B. $24x^3 + 36x^2 - 42x - 36$
- ☒ C. $24x^3 + 60x^2 - 42x - 36$
- ☒ D. $24x^3 + 60x^2 + 6x - 36$

6. A polynomial expression is shown below.

$$(8x^5 - 24x^4) - (sx^3 - 7)(2x^2 - 6x + 4)$$

The expression is simplified to $-16x^3 + 14x^2 - 42x + 28$.

What is the value of s?

- ☐ A. -4
- ☐ B. 4
- ☐ C. 2
- ☐ D. -2

7. Factor the following polynomial completely.

$$7x^3 - 70x^2 + 147x$$

- ☒ A. $7(x^3 - 10x^2 + 21x)$
- ☒ B. $7(x^3 + 10x + 21)$
- ☒ C. $7x(x - 3)(x + 7)$
- ☒ D. $7x(x - 3)(x - 7)$

$$1 + 21 = 22 \times$$

$$3 + 7 = 10 \checkmark$$

8. Factor the following polynomial completely.

$$-0.9x^2 - 5.4x + 6.3$$

- ☒ A. $-0.9(x + 7)(x - 1)$
- ☒ B. $0.9(x + 7)(x - 1)$
- ☒ C. $-0.9(x + 7)(x + 1)$
- ☒ D. $-0.9(x^2 + 6x - 7)$

$$1 - 7 = -6$$

$$-1 = 6$$

GCF

7x

7/7 = 1

-70/7 = -10

147/7 = 21

GCF

-0.9

-0.9(x^2 + 6x - 7)

-0.9(x + 7)(x - 1)

7

1/7

9. Which binomial is a factor of $x^2 + 2x - 15$?

- ☒ A. $(x + 15)$ $(x+5)(x-3)$
☒ B. $(x - 5)$
☒ C. $(x - 3)$
☒ D. $(x - 1)$

$$\frac{15}{1 \cdot 15} \quad \frac{15-1=14 \times}{5-3=2 \checkmark}$$

10. Factor the following polynomial.

$$\frac{GCF}{5x}$$

$$\frac{10x^2}{5x} + \frac{25x}{5x} = 5x(2x+5)$$

- ☒ A. $5x(2x + 5)$
☒ B. $5x^2(2x + 5)$
☒ C. $5(2x + 5)$
☒ D. $5x(2x + 25)$

11. Which binomial is a factor of $x^2 - 64$?

- ☐ A. $(x - 32)$
☐ B. $(x - 16)$
☒ C. $(x - 8)$
☐ D. $(x + 4)$

$$8^2 \leftarrow \sqrt{64} \quad (x+8)(x-8)$$

12. Simplify the following expression.

$$\frac{2x^2 - 18}{x + 3}$$

$$\frac{2x^2 - 18}{x + 3} = \frac{2(x^2 - 9)}{x + 3} = \frac{2(x-3)(x+3)}{x+3} = 2(x-3)$$

- ☒ A. $2x + 3$
☒ B. $2x - 6$
☒ C. $2x + 18$
☒ D. $6x - 12$

13. Simplify the following expression.

$$\frac{GCF}{2x} \quad \frac{2x(x^2 + 7x - 4)}{2x} = x^2 + 7x - 4$$

- ☐ A. $15x^2 + 4x$
☐ B. $x^2 + 12x - 6$
☐ C. $2x^3 + 14x^2 - 4$
☒ D. $x^2 + 7x - 4$

14. Simplify the following expression.

$$\frac{(x+8)(x-1)}{(x+8)(x+2)} = \frac{x-1}{x+2}$$

$$\frac{8}{1 \cdot 8} \quad \frac{8-1=7}{2 \cdot 4} \quad \frac{8-1=7}{4-2=2x}$$

- ☒ A. $\frac{x-1}{x+2}$
☒ B. 1
☒ C. $\frac{x+8}{x+2}$
☒ D. $\frac{x-1}{x+8}$

15. Simplify the following expression.

$$\frac{x-5}{-10x^2 + 60x - 50}$$

$$\frac{GCF}{-10}$$

- ☐ A. $-10x + 10$
☐ B. $-10x - 10$
☐ C. $\frac{1}{-10x - 10}$
☒ D. $\frac{1}{-10x + 10}$

$$\frac{x-5}{-10(x^2-6x+5)} = \frac{x-5}{-10(x-1)(x-5)}$$

$$\frac{5}{1 \cdot 5} = \frac{1}{-10(x-1)}$$

16. Simplify the following expression.

$$\sqrt{16} = 4$$

$$\frac{GCF}{4}$$

$$\frac{4x^2 - 64}{x^2 + 6x + 8} = \frac{4(x^2 - 16)}{(x+4)(x+2)} = \frac{4(x-4)(x+4)}{(x+4)(x+2)} = \frac{4(x-4)}{x+2} = \frac{4x-16}{x+2}$$

- ☒ A. $\frac{4x-64}{x-2}$
☒ B. $\frac{4x+16}{x-2}$
☒ C. $\frac{16x-16}{x+2}$
☒ D. $\frac{4x-16}{x+2}$

17. Simplify the following expression.

$$\frac{GCF}{4x^2} \frac{4x^8 - 28x^{15}}{x^2 - 7x^9} = \frac{4x^8(1-7x^7)}{x^2(1-7x^7)} = 4x^6$$

☒ A. $4x^6$
☐ B. $-4x^7$
☐ C. $4x^8$
☐ D. $8x^6$

18. Simplify the following expression.

$$\frac{3x^2 + 21x + 36}{3x^2 + 6x - 24} = \frac{3(x^2 + 7x + 12)}{3(x^2 + 2x - 8)} = \frac{x+3}{x-2}$$

☐ A. $\frac{x-3}{3x-1}$
☐ B. $\frac{3x+9}{x+2}$
☒ C. $\frac{x+3}{x-2}$
☐ D. $\frac{x-3}{x+6}$

$$\frac{1.8}{2.4} \cdot \frac{12}{2.6} = \frac{3(x+3)(y+4)}{3(x+4)(x-2)} = \frac{x+3}{x-2}$$

19. A band just recorded a new album with 10 tracks. The shortest song on the album is 1 minute and 17 seconds. The longest song on the album is 5 minutes and 56 seconds. What is a reasonable estimate for the total time of the album?

- ☐ A. 4 minutes
☐ B. 70 minutes
☐ C. 9 minutes
☒ D. 35 minutes

10 songs

Shortest Song

$$1:60 + 17$$

77 seconds

Longest Song

$$5:60 + 56$$

356 seconds

$$\frac{77 + 356}{2} = 216.5$$

$$10(216.5) = 2165 \text{ seconds}$$

of songs

average length in seconds

$$\frac{2165}{60} = 36.1 \text{ minutes}$$

Only care About S

$$-16x^3 + 14x^2 - 42x + 28$$

$$(8x^5 - 24x^4) - (5x^3 - 7)(2x^2 - 6x + 4)$$

$$8x^5 - 24x^4 + (-25x^5 + 65x^4 - 45x^3)$$

$$8x^5 - 25x^5 - 24x^4 + 65x^4 - 45x^3$$

$$-17x^5 + 41x^4 - 45x^3$$

$$-24 + 65 = 41$$

$$65 - 24 = 41$$

$$S = 4$$

$$\frac{-45}{-9} = \frac{-16}{-9}$$

$$S = 4$$