Date Completed: _____
Mentor Initials: _____

Factoring Polynomials (Intermediate)

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Multiple Choice

1. Which value is a solution to the equation $x(x+2)=5$?

A) $-2-2\sqrt{6}$

B) $2-2\sqrt{6}$

C) $-1-\sqrt{6}$

D) $1-\sqrt{6}$

2. $x^4-4x^2+4=0$

What is a solution to the given equation?

A) $x=-2$
B) $x=-\sqrt{2}$
C) $x=0$
D) $x=2$

3. What are the solutions of the quadratic equation $18x^2+27x+9=0$?

A) $x=-1$ and $x=-\frac{1}{2}$

B) $x=-\frac{1}{3}$ and $x=-\frac{3}{2}$

C) $x=\frac{1}{2}$ and $x=1$

D) $x=\frac{1}{3}$ and $x=\frac{2}{3}$

4. Which expression is NOT a factor of x^4-10x^2+9 ?

A) $x+3$
B) $x-1$
C) x^2+1
D) x^2-9

5. If $4a+2b=6c$, which of the following expressions is equal to $4a^2+4ab+b^2$?

A) 6c
B) $6c^2$
C) $9c^2$
D) $36c^2$

6. Which of the following expressions is a factor of $2x^2 + 3x - 9$?

I. $2x + 3$
II. $x + 3$

A) I only
B) II only
C) I and II
D) Neither I nor II

7. $$\frac{(x-3)^2(x+2)}{x^2-6x+9} = 0$$

What is a solution to the given equation?

A) -9
B) -2
C) 3
D) 9

8. Which expression is equivalent to $x^4 - 32x^2 + 256$?

A) $(x-4)^4$
B) $(x-4)(x+4)^3$
C) $(x-4)^3(x+4)$
D) $(x-4)^2(x+4)^2$

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

Which of the following is NOT a factor of the polynomial above?

A) x
B) $x + 4$
C) $2x + 1$
D) $2x + 4$

10. For all values of x greater than 4, which of the following expressions is equivalent to $\frac{x^2-5x+4}{x^2-16} = 0$?

A) $\frac{x+1}{x+4}$
B) $\frac{x+1}{x-4}$
C) $\frac{x-1}{x+4}$
D) $\frac{x-1}{x-4}$

Grid-In

11. What value of x satisfies the equation $\frac{x^2+3x}{x+3} = 3$?

12. What is the positive solution of the quadratic equation $2x^2 + 2x - 4 = 0$?

13. What is the value of the expression $x^2 + 2x - 2xy - 2y + y^2$ when $x - y = 40$?

14. The positive solution to the equation $x^2 - 11 = 4x$ can be written in the form $a + \sqrt{b}$, where a and b are integers. What is the value of b ?

15. If $x^2 - y^2 = 20$ and $x^2 + y^2 = 30$, what is the value of $x^4 - y^4$?