CUNY Elementary Algebra Final Exam

Sample C
June 2016

For the most up-to-date information on this exam, please visit http://www.cuny.edu/testing
1. Simplify. 
   \[ \sqrt{40} + \sqrt{250} \]
   A) \(10\sqrt{2} + 10\sqrt{5}\)
   B) \(29\sqrt{10}\)
   C) \(\sqrt{290}\)
   D) \(7\sqrt{10}\)

2. Simplify completely. 
   \[ \sqrt{2}(\sqrt{2} + \sqrt{7}) \]
   A) \(2 + \sqrt{14}\)
   B) \(4 + \sqrt{14}\)
   C) \(\sqrt{2} + \sqrt{14}\)
   D) \(2 + \sqrt{7}\)

   \[ \frac{\sqrt{6}\sqrt{30}}{\sqrt{5}} \]
   A) \(5\sqrt{6}\)
   B) \(\sqrt{6}\)
   C) \(6\)
   D) \(1\)

4. Simplify. 
   \( (3x^2y)(-4xy^3) \)
   A) \(12x^3y^4\)
   B) \(-12x^3y^4\)
   C) \(-12x^2y^3\)
   D) \(12x^2y^3\)
5. Simplify.

\[ x^{-6}x^2 \]

A) \( \frac{1}{x^3} \)

B) \( \frac{1}{x^4} \)

C) \(-x^4\)

D) \(x^4\)


\[(7x^2 - 6x + 2) - (4x^2 - 3x + 5)\]

A) \(3x^2 - 9x - 3\)

B) \(11x^2 - 3x - 3\)

C) \(3x^2 - 3x - 3\)

D) \(3x^2 - 3x + 7\)

7. Multiply.

\[(4x - 2)(x^2 - 5x + 3)\]

A) \(4x^3 - 22x^2 + 22x - 6\)

B) \(4x^3 - 20x^2 + 22x - 6\)

C) \(4x^3 - 22x^2 + 12x - 6\)

D) \(4x^3 - 20x^2 + 12x - 6\)

8. Simplify completely.

\[\frac{20x^9 - 30x^4 + 10x^3}{-10x^3}\]

A) \(-2x^6 + 3x\)

B) \(20x^9 - 30x^4\)

C) \(2x^6 - 3x + 1\)

D) \(-2x^6 + 3x - 1\)


\[8x^2y - 18y^3\]

A) \(2(4x^2y - 9y^3)\)

B) \(2y(4x - 9y)(4x + 9y)\)

C) \(2y(2x - 3y)(2x - 3y)\)

D) \(2y(2x - 3y)(2x + 3y)\)
10. Which of the following is a factor of the polynomial?
   \[5x^2 + 13x - 6\]
   A) \(x - 3\)
   B) \(5x + 2\)
   C) \(5x - 3\)
   D) \(x + 3\)

11. Which of the following is a factor of the polynomial?
   \[15cw - 20cz - 6dw + 8dz\]
   A) \(5c + 2d\)
   B) \(5c + 4d\)
   C) \(3w - 4z\)
   D) \(3w + 4z\)

12. If \(y\) represents a number, which equation is a correct translation of the sentence?
   15 is 28 less than 5 times a number.
   A) \(15 = 5(28 - y)\)
   B) \(15 = 5y - 28\)
   C) \(15 = 5(y - 28)\)
   D) \(15 = 28 - 5y\)

13. Solve for \(x\).
   \[
   \frac{2x}{3} + \frac{1}{2} = \frac{5}{6}
   \]
   A) \(x = \frac{1}{2}\)
   B) \(x = \frac{2}{3}\)
   C) \(x = \frac{3}{2}\)
   D) \(x = 2\)

14. Solve for \(x\).
   \[3 - 9x = -7(x + 5)\]
   A) \(x = 19\)
   B) \(x = -16\)
   C) \(x = 16\)
   D) \(x = -1\)
15. What is the value of the $x$-coordinate of the solution to the system of equations?

\[ \begin{align*}
-2x + y &= 2 \\
8x - 5y &= 4
\end{align*} \]

A) $x = 7$
B) $x = -3$
C) $x = 3$
D) $x = -7$

16. Solve for $x$.

$z = 2x - 5y$

A) $x = 2(z + 5y)$
B) $x = \frac{z}{2} + 5y$
C) $x = \frac{z - 5y}{2}$
D) $x = \frac{z + 5y}{2}$

17. Find all solutions to the equation.

$y^2 - 36 = 5y$

A) $y = -9$ or $y = 4$
B) $y = -9$ or $y = -4$
C) $y = 9$ or $y = 4$
D) $y = 9$ or $y = -4$

18. What is the value of $x$ in the right triangle?

A) 7
B) $\sqrt{77}$
C) $\sqrt{85}$
D) $\sqrt{7}$
19. Find the graph of the solution to the inequality.

\[-2x + 3 \geq 4x - 9\]

A)  
B)  
C)  
D)  

20. Given \(a = 2\) and \(b = -3\), evaluate the expression given below.

\[a^2b + ab + b^2\]

A) \(-9\)  
B) \(-15\)  
C) 3  
D) 27  

21. Which of the following is the graph of the equation?

\[-5x + 2y = 10\]

A)  
B)  
C)  
D)  

[6]
22. Find the equation of the line passing through the points (1, –2) and
(–2, 7). Write the equation in slope-intercept form.
   A) \( y = 3x + 13 \)
   B) \( y = 3x - 5 \)
   C) \( y = -3x - 2 \)
   D) \( y = -3x + 1 \)

23. Find the equation of the vertical line passing through the
    point (–2, –3).
    A) \( y = \frac{3}{2}x - 3 \)
    B) \( y = x - 3 \)
    C) \( x = -2 \)
    D) \( y = -3 \)

24. Find the slope and \( y \)-intercept for the graph of the equation.
    \( 8x - 3y = 9 \)
    A) Slope = \( \frac{3}{8} \) and \( y \)-intercept = (0, 9)
    B) Slope = \( -\frac{8}{3} \) and \( y \)-intercept = (0, –3)
    C) Slope = \( \frac{8}{3} \) and \( y \)-intercept = (0, –3)
    D) Slope = \( -\frac{3}{8} \) and \( y \)-intercept = (0, 9)

25. What is the slope of the line graphed below?

   A) \( \frac{4}{3} \)
   B) \( \frac{3}{4} \)
   C) \( -\frac{3}{4} \)
   D) \( -\frac{4}{3} \)
## CUNY Elementary Algebra Final Exam

### Sample C

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