



## **CUNY Elementary Algebra Final Exam**

**Sample E**  
**June 2016**

**For the most up-to-date information on this exam, please visit  
<http://www.cuny.edu/testing>**

You are allowed to use a *scientific calculator* on this exam.

1. Simplify.

$$\sqrt{90} + \sqrt{250}$$

- A)  $8\sqrt{10}$
- B)  $2\sqrt{85}$
- C)  $34\sqrt{10}$
- D)  $10\sqrt{3} + 10\sqrt{5}$

2. Simplify completely.

$$\sqrt{5}(\sqrt{3} + \sqrt{5})$$

- A)  $25 + \sqrt{15}$
- B)  $5 + \sqrt{3}$
- C)  $\sqrt{5} + \sqrt{15}$
- D)  $5 + \sqrt{15}$

3. Simplify completely.

$$\frac{\sqrt{7}\sqrt{21}}{\sqrt{3}}$$

- A)  $3\sqrt{7}$
- B)  $\sqrt{7}$
- C) 1
- D) 7

4. Simplify.

$$\frac{-14a^8b^6}{-2a^4b^2}$$

- A)  $7a^2b^3$
- B)  $7a^{12}b^8$
- C)  $7a^4b^4$
- D)  $7a^4b^3$

You are allowed to use a *scientific calculator* on this exam.

5. Simplify.

$$(3x^2y^4)^3$$

- A)  $3x^6y^{12}$
- B)  $9x^6y^{12}$
- C)  $27x^5y^7$
- D)  $27x^6y^{12}$

6. Simplify completely.

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

- A)  $4x^2 + 3x + 2$
- B)  $8x^2 + 3x + 2$
- C)  $8x^2 + 11x + 2$
- D)  $8x^2 + 3x - 8$

7. Multiply.

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

- A)  $3x^3 - 23x^2 + 42x - 20$
- B)  $3x^3 - 18x^2 + 12x - 20$
- C)  $3x^3 - 23x^2 + 12x - 20$
- D)  $3x^3 - 18x^2 + 42x - 20$

8. Simplify completely.

$$\frac{30x^9 + 8x^7 - 2x^5}{-2x^5}$$

- A)  $-15x^4 - 4x^2$
- B)  $15x^4 + 4x^2 - 1$
- C)  $30x^9 + 8x^7$
- D)  $-15x^4 - 4x^2 + 1$

9. Factor *completely*.

$$18x^3 - 200xy^2$$

- A)  $2x(3x - 10y)(3x + 10y)$
- B)  $2(9x^3 - 100xy^2)$
- C)  $2x(9x - 100y)(9x + 100y)$
- D)  $2x(3x - 10y)(3x - 10y)$

You are allowed to use a *scientific calculator* on this exam.

10. Which of the following is a factor of the polynomial?

$$2x^2 + 11x - 21$$

- A)  $x + 7$
- B)  $x - 7$
- C)  $2x + 3$
- D)  $2x - 7$

11. Which of the following is a factor of the polynomial?

$$45cw + 63cz - 20dw - 28dz$$

- A)  $9c - 7d$
- B)  $9c + 4d$
- C)  $5w + 7z$
- D)  $5w - 7z$

12. If  $y$  represents a number, which equation is a correct translation of the sentence?

**30 subtracted from 7 times a number is 4.**

- A)  $30 - 7y = 4$
- B)  $7(y - 30) = 4$
- C)  $7y - 30 = 4$
- D)  $7(30 - y) = 4$

13. Solve for  $x$ .

$$\frac{x + 4}{2} = \frac{x + 9}{3}$$

- A)  $x = 1$
- B)  $x = 5$
- C)  $x = 6$
- D)  $x = 14$

14. Solve for  $x$ .

$$18 - 5x = -3(x - 2)$$

- A)  $x = 10$
- B)  $x = 6$
- C)  $x = -12$
- D)  $x = 12$

You are allowed to use a *scientific calculator* on this exam.

15. What is the value of the  $x$ -coordinate of the solution to the system of equations?

$$\begin{aligned}2x + y &= 3 \\ -5x - 2y &= 4\end{aligned}$$

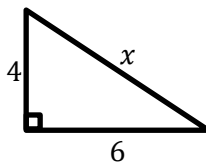
- A)  $x = 7$   
B)  $x = -10$   
C)  $x = 10$   
D)  $x = -7$
16. Solve for  $x$ .

$$z = 5x - 7y$$

- A)  $x = \frac{z+7y}{5}$   
B)  $x = \frac{z-7y}{5}$   
C)  $x = \frac{z}{5} + 7y$   
D)  $x = 5(z + 7y)$
17. Find *all* solutions to the equation.

$$x^2 + 2x = 15$$

- A)  $x = 3$  or  $x = -5$   
B)  $x = -3$  or  $x = 5$   
C)  $x = 3$  or  $x = 5$   
D)  $x = -3$  or  $x = -5$
18. What is the value of  $x$  in the right triangle?

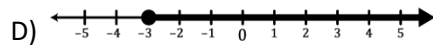
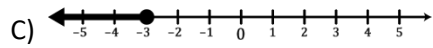
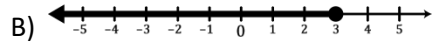
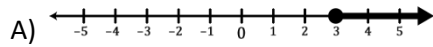


- A)  $\sqrt{10}$   
B)  $2\sqrt{13}$   
C) 10  
D)  $2\sqrt{5}$

You are allowed to use a *scientific calculator* on this exam.

19. Find the graph of the solution to the inequality.

$$2x - 3 \geq 5x + 6$$



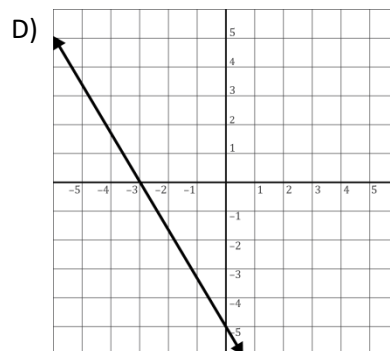
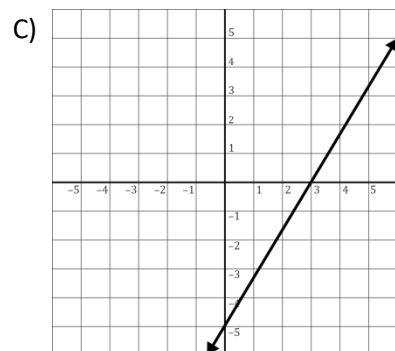
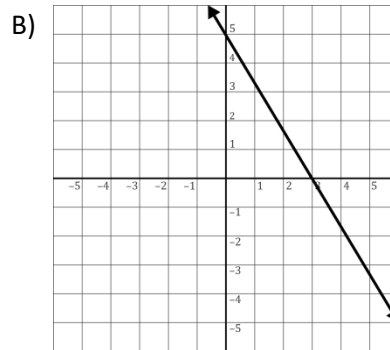
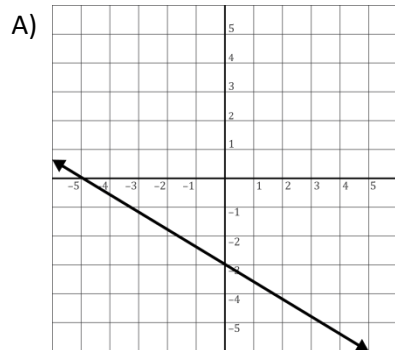
20. Given  $a = 3$  and  $b = -1$ , evaluate the expression given below.

$$ab - b^2$$

- A)  $-4$
- B)  $-2$
- C)  $2$
- D)  $4$

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

$$5x + 3y = -15$$



You are allowed to use a *scientific calculator* on this exam.

22. Find the equation of the line passing through the points  $(-1, 7)$  and  $(2, -8)$ . Write the equation in slope-intercept form.

- A)  $y = -5x + 2$
- B)  $y = -5x + 7$
- C)  $y = 5x + 12$
- D)  $y = 5x - 18$

23. Find the equation of the horizontal line passing through the point  $(-5, 3)$ .

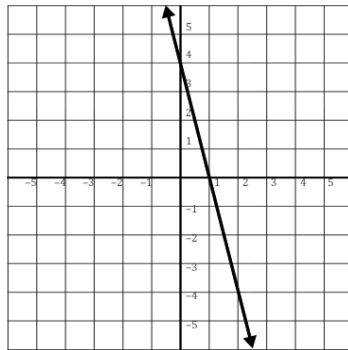
- A)  $x = -5$
- B)  $y = -\frac{3}{5}x$
- C)  $y = 3$
- D)  $y = x + 3$

24. Find the slope and  $y$ -intercept for the graph of the equation.

$$6x - 7y = 35$$

- A) Slope =  $\frac{6}{7}$  and  $y$ -intercept =  $(0, -5)$
- B) Slope =  $-\frac{6}{7}$  and  $y$ -intercept =  $(0, -5)$
- C) Slope =  $\frac{7}{6}$  and  $y$ -intercept =  $(0, 35)$
- D) Slope =  $-\frac{7}{6}$  and  $y$ -intercept =  $(0, 35)$

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



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

You are allowed to use a *scientific calculator* on this exam.

### Answer Key

#### CUNY Elementary Algebra Final Exam

#### Sample E

Test Item Number	Correct Answer
1.	A
2.	D
3.	D
4.	C
5.	D
6.	B
7.	A
8.	D
9.	A
10.	A
11.	C
12.	C
13.	C
14.	B
15.	C
16.	B
17.	A
18.	B
19.	C
20.	A
21.	D
22.	A
23.	C
24.	A
25.	B