CUNY Elementary Algebra Final Exam

Sample C

June 2016

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You are <u>allowed</u> to use a *scientific calculator* on this exam.

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) $2 + \sqrt{7}$

3. Simplify.

$$\frac{\sqrt{6}\sqrt{30}}{\sqrt{5}}$$

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) $12x^2y^3$

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5. Simplify.

$$\boldsymbol{x^{-6}x^{2}}$$

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

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

C) $-x^4$

D) x^4

6. Simplify completely.

$$\boldsymbol{\left(7x^{2}-6x+2\right)-\left(4x^{2}-3x+5\right)}$$

A) $3x^2 - 9x - 3$
B) $11x^2 - 3x - 3$
C) $3x^2 - 3x - 3$
D) $3x^2 - 3x + 7$

7. Multiply.

$$\boldsymbol{(4x-2)(x^{2}-5x+3)}$$

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.

$$\boldsymbol{\frac{20x^{9}-30x^{4}+10x^{3}}{-10x^{3}}}$$

A) $-2x^6 + 3x$
B) $20x^9 - 30x^4$
C) $2x^6 - 3x + 1$
D) $-2x^6 + 3x - 1$

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9. Factor *completely*.

$$\boldsymbol{8x^2y - 18y^3}$$

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?

$$\boldsymbol{5x^2 + 13x - 6}$$

A) $x - 3$
B) $5x + 2$
C) $5x - 3$
D) $x + 3$

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

$$\boldsymbol{15cw - 20cz - 6dw + 8dz}$$

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.

$$\frac{\boldsymbol{2x}}{\boldsymbol{3}} + \frac{\boldsymbol{1}}{\boldsymbol{2}} = \frac{\boldsymbol{5}}{\boldsymbol{6}}$$

A) $x = \frac{1}{2}$
B) $x = \frac{3}{2}$
C) $x = \frac{2}{3}$
D) $x = 2$

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14. Solve for x.

$$\mathbf{3 - 9x = -7(x + 5)}$$

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?

$$\mathbf{-2x + y = 2}$$
$$\mathbf{8x - 5y = 4}$$

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

16. Solve for x.

$$\mathbf{z = 2x - 5y}$$

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.

$$\mathbf{y^2 - 36 = 5y}$$

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

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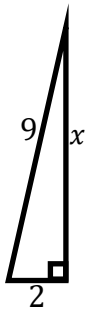
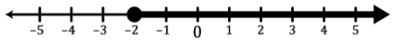
18. What is the value of x in the right triangle?

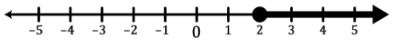


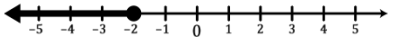
A) 7
B) $\sqrt{77}$
C) $\sqrt{85}$
D) $\sqrt{7}$

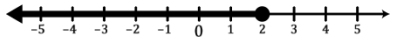
19. Find the graph of the solution to the inequality.

$$-2x + 3 \geq 4x - 9$$

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

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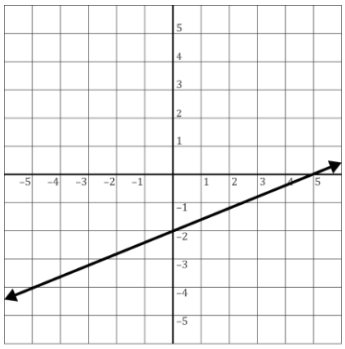
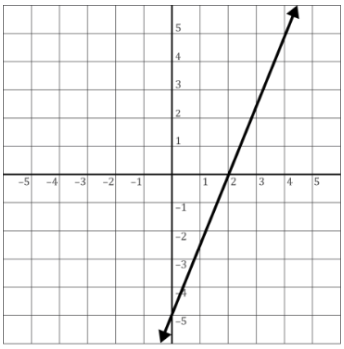
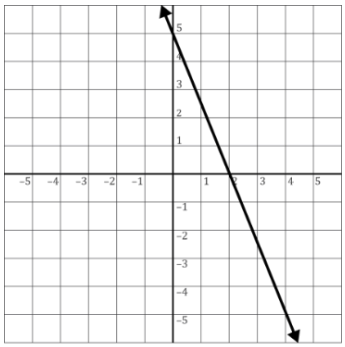
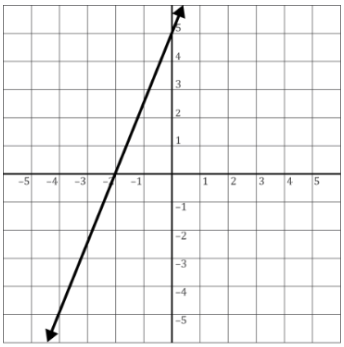
21. Which of the following is the graph of the equation?

$$-5x + 2y = 10$$

A) 

B) 

C) 

D) 

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) $y = -3$

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

$$\boldsymbol{8x - 3y = 9}$$

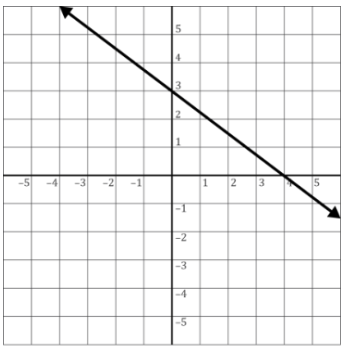
A) Slope$= \frac{3}{8}$ and y-intercept $= (0, 9)$

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) $-\frac{4}{3}$