CUNY Elementary Algebra Final Exam

Sample E

November 2016

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1. Simplify.

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

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

2. Simplify completely.

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

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

3. Simplify completely.

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

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

4. Simplify.

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

A) $7a^2b^3$

B) $7a^{12}b^8$

C) $7a^4b^4$

D) $7a^4b^3$

5. Simplify.

$$\left(3x^2y^4\right)^3$$

A) $3x^6y^{12}$

B) $9x^6y^{12}$

C) $27x^5y^7$

D) $27x^6y^{12}$

6. Simplify completely.

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

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) $2x(3x-10y)(3x-10y)$

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

$$\boldsymbol{2x^2 + 11x - 21}$$

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

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

$$\boldsymbol{45cw + 63cz - 20dw - 28dz}$$

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.

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

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

14. Solve for x.

$$\boldsymbol{18 - 5x = -3(x - 2)}$$

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

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

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

A) $x = 7$
B) $x = -10$
C) $x = 10$
D) $x = -7$

16. Solve for x.

$$\mathbf{z = 5x - 7y}$$

A) $x = \frac{z+7y}{5}$

B) $x = \frac{z-7y}{5}$

C) $x = \frac{z}{5} + 7y$

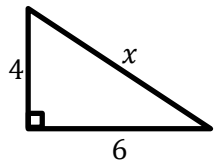
D) $x = 5(z + 7y)$

17. Find *all* solutions to the equation.

$$\mathbf{x^2 + 2x = 15}$$

A) $x = 3$ or $x = -5$
B) $x = -3$ or $x = 5$
C) $x = 3$ or $x = 5$
D) $x = -3$ or $x = -5$

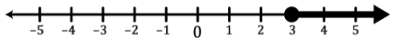
18. What is the value of x in the right triangle?

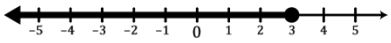


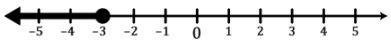
A) $\sqrt{10}$
B) $2\sqrt{13}$
C) 10
D) $2\sqrt{5}$

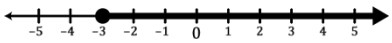
19. Find the graph of the solution to the inequality.

$$\boldsymbol{2x - 3 \geq 5x + 6}$$

A) 

B) 

C) 

D) 

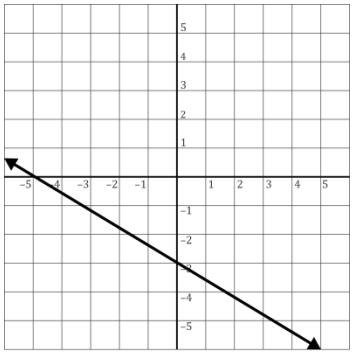
20. Given $a = 3$ and $b = -1$, evaluate the expression given below.

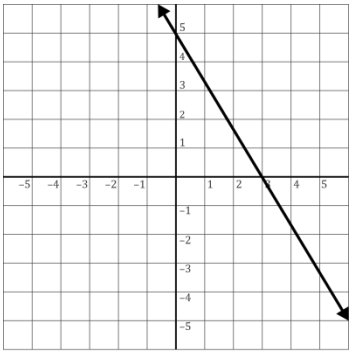
$$\boldsymbol{ab - b^2}$$

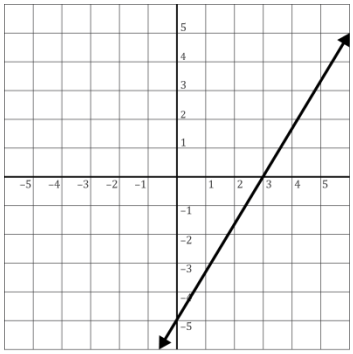
A) -4
B) -2
C) 2
D) 4

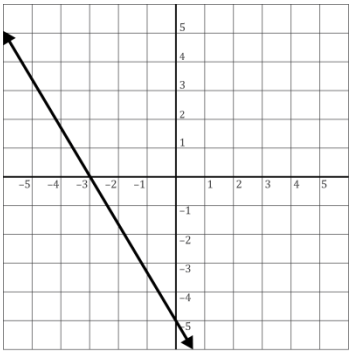
21. Which of the following is the graph of the equation?

$$\boldsymbol{5x + 3y = -15}$$

A) 

B) 

C) 

D) 

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.

$$\boldsymbol{6x - 7y = 35}$$

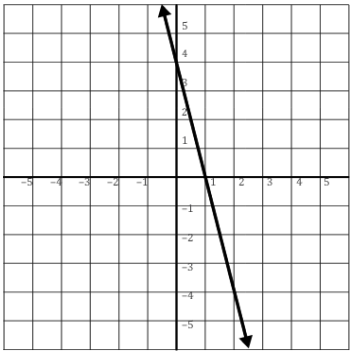
A) Slope$= \frac{6}{7}$ and y-intercept $= (0, -5)$

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