1. Complete the square by filling in the missing number. $x^2 + \frac{3}{2}x + \_\_\_\_\_$

A. $\frac{25}{64}$

B. $\frac{16}{25}$

C. $\frac{9}{16}$

D. $\frac{49}{100}$

E. $\frac{1}{64}$

F. $\frac{4}{25}$

G. $\frac{9}{100}$

H. $\frac{4}{9}$

2. Multiply the polynomials. $(4r^2 - 8)(4r^2 + 8)$

A. $64r^4 - 16$

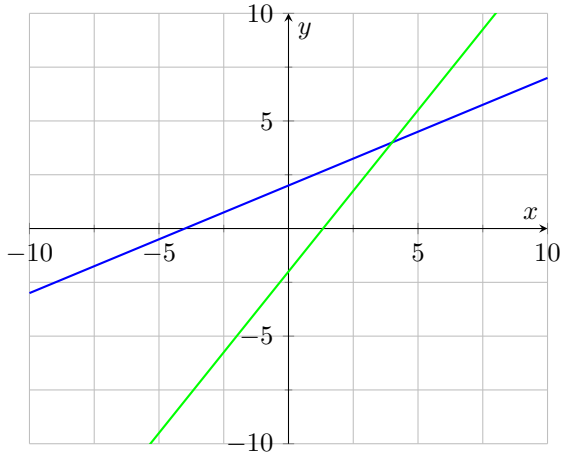
B. $16r^4 - 64r^2 + 64$

C. $16r^4 - 64$

D. $16r^2 - 64$

E. $16r^4 + 64r^2 - 64$

3. Below is a graph of the system of linear equations $\left\{ \begin{array}{l} y = \frac{1}{2}x + 2 \\ y = \frac{3}{2}x - 2 \end{array} \right\}$. Use this graph to solve the linear inequality $\frac{1}{2}x + 2 \geq \frac{3}{2}x - 2$.



A. $x \geq 5$

B. $x \leq 7$

C. $x \geq 7$

D. $x \leq 5$

E. $x \leq 4$

F. $x \geq 4$

4. Factor the following quadratic polynomial. $20a^2 - 43a - 12$

A. $(4a - 1)(5a + 12)$

B. Not factorable. This trinomial is prime.

C. $(4a - 2)(5a + 6)$

D. $(4a + 2)(5a - 6)$

E. $(20a - 2)(a + 6)$

F. $(4a + 1)(5a - 12)$

G. $(20a + 2)(a - 6)$

H. $(4a - 2)(5a - 6)$

5. Multiply the polynomials. $(-7r^2 - 6r + 6)(5r + 3)$

A. $-36r^3 - 51r^2 + 12r + 18$

B. $-35r^3 - 51r^2 + 12r + 23$

C. $-35r^3 - 51r^2 + 12r + 18$

D. $-35r^3 - 57r^2 + 12r + 18$

E. $-35r^3 - 51r^2 + 9r + 18$

6. Solve the following linear system by substitution. $\left\{ \begin{array}{l} -9x + 7y = 0 \\ 3x - 2y = 0 \end{array} \right\}$

A. $(-3, -3)$.

B. $(1, 1)$.

C. There is no solution.

D. $(4, 4)$.

E. $(2, 2)$.

F. There are infinitely many solutions.

G. $(-2, -2)$.

H. $(0, 0)$.

7. Use the slope-intercept form of each line to determine the number of solutions of the system $\left\{ \begin{array}{l} y = -\frac{1}{2}x + 2 \\ y = \frac{1}{2}x + 3 \end{array} \right\}$; then classify each system as a consistent system of independent equations, an inconsistent system, or a consistent system of dependent equations.

A. The system has two solutions. Therefore, it is a inconsistent system of dependent equations.

B. The system has infinitely many solutions. Therefore, it is a consistent system of dependent equations.

C. The system has no solutions. Therefore, it is an inconsistent system of equations.

D. The system has two solutions. Therefore, it is a consistent system of independent equations.

E. The system has one solution. Therefore, it is an inconsistent system of dependent equations.

F. The system has one solution. Therefore, it is a consistent system of independent equations.

G. The system has no solutions. Therefore, it is a consistent system of independent equations.

H. The system has infinitely many solutions. Therefore, it is an inconsistent system of dependent equations.

8. Solve the following linear inequality $3x - 4 > 0$ AND $x + 4 < -4$.

A. $-\frac{31}{4} < x < \frac{19}{12}$

B. $x > -\frac{2}{3}$ OR $x < -10$

C. $x < -\frac{2}{3}$ OR $x > -10$

D. $x > \frac{13}{3}$ OR $x < -5$

E. The inequality has no solutions. Therefore, it is a contradiction.

F. $\frac{19}{12} < x < -\frac{31}{4}$

G. $x < \frac{13}{3}$ OR $x > -5$

H. $-8 < x < \frac{4}{3}$

9. Solve the quadratic equation using the quadratic formula. Leave the radical unsimplified. $9\gamma^2 = 6\gamma + 3$

A. $\gamma = \frac{6 \pm \sqrt{3}}{18}$

B. $\gamma = \frac{6 \pm \sqrt{109}}{18}$

C. $\gamma = \frac{6 \pm \sqrt{144}}{18}$

D. $\gamma = \frac{-6 \pm \sqrt{97}}{18}$

E. $\gamma = \frac{-6 \pm \sqrt{124}}{-18}$

F. $\gamma = \frac{-6 \pm \sqrt{236}}{18}$

G. $\gamma = \frac{-6 \pm \sqrt{113}}{-18}$

H. This equation has no real number solutions.

10. Factor the expression by grouping. $8\beta\gamma - 6\gamma v + 20\beta w - 15wv$

A. $(5w + 3v)(4\beta - 2\gamma)$

B. $(5w)(4\beta - 3v + 2\gamma)$

C. $(4\beta + 3v)(2\gamma + 5w)$

D. $(4\beta - 3v)(2\gamma - 5w)$

E. $(2\gamma)(4\beta - 3v + 5w)$

F. $(2\gamma)(5w + 3v + 4\beta)$

G. $(4\beta)(5w + 3v + 2\gamma)$

H. $(4\beta - 3v)(2\gamma + 5w)$

11. Completely factor using the forms for perfect square trinomials. $49c^2 - 84c + 36$

A. $(6c + 7)(6c - 8)$

B. $(7c - 6)(3c + 6)$

C. Not factorable. This trinomial is prime.

D. $(49c - 6)(c - 6)$

E. $(7c + 6)(7c - 6)$

F. $(7c - 6)(7c - 6)$

G. $(7c - 1)(7c + 36)$

H. $(7c + 6)(3c + 6)$

12. Solve the following linear inequality $-2(-4x+4) \leq -(x-5)$.

A. $x \geq -\frac{13}{27}$

B. $x \leq -\frac{26}{9}$

C. $x \leq \frac{13}{27}$

D. $x \leq \frac{13}{9}$

E. $x \geq \frac{13}{18}$

F. $x \leq -\frac{13}{9}$

G. $x \geq -\frac{13}{3}$

H. $x \geq \frac{52}{9}$

13. Simplify the expression. $(\frac{4x^5}{a^3})^4$

A. $\frac{4x^{20}}{a^{12}}$

B. $4x^{20}a^{12}$

C. $4x^9a^7$

D. $\frac{256x^{20}}{a^{12}}$

E. $\frac{4x^9}{a^7}$

F. $16x^9a^7$

G. $\frac{256x^9}{a^7}$

H. $256x^9a^7$

14. Solve the following linear system by the addition method. $\left\{ \begin{array}{l} -x+y=0 \\ -2x+3y=4 \end{array} \right\}$

A. There is no solution.

B. $(3,3)$.

C. $(0,0)$.

D. $(5,5)$.

E. $(4,4)$.

F. $(8,8)$.

G. $(7,7)$.

H. There are infinitely many solutions.

15. Billy Bob made an investment of $11000. One part of the investement went into a bond fund which paid a rate of 4 percent per year, and the rest of the investment went into stocks which earn interest at a rate of 9 percent per year. If the total interest on both investments was $822 after one year, write a system of equations which, when solved, give the amounts which were invested at each rate.

A. The system is $\left\{ \begin{array}{c} x + y = 822 \\ 4x + y = 9 \cdot 11000 \end{array} \right\}$.

B. The system is $\left\{ \begin{array}{c} x + y = 822 \\ 0.04x + 0.09y = 11000 \end{array} \right\}$.

C. The system is $\left\{ \begin{array}{c} x + y = 11000 \\ 0.04x + 0.09y = 822 \end{array} \right\}$.

D. The system is $\left\{ \begin{array}{c} x + y = 11000 \\ 4x + 9y = 822 \end{array} \right\}$.

E. The system is $\left\{ \begin{array}{c} x + 0.04y = 11000 \\ 0.09x + y = 822 \end{array} \right\}$.

F. The system is $\left\{ \begin{array}{c} 0.04x + y = 11000 \\ x + 0.09y = 822 \end{array} \right\}$.

G. The system is $\left\{ \begin{array}{c} x + y = 822 \\ 4x + 9y = 11000 \end{array} \right\}$.

H. The system is $\left\{ \begin{array}{c} x + y = 11000 \\ 0.04x + y = 0.09 \cdot 822 \end{array} \right\}$.

16. Solve the following equation $|x-5| = |-2x+5|$.

A. $\frac{10}{3}$ or 0

B. $-\frac{5}{3}$ or -3

C. $-\frac{5}{6}$ or $-\frac{1}{4}$

D. $-\frac{40}{3}$ or 3

E. $\frac{10}{9}$ or -1

F. -10 or $-\frac{1}{3}$

G. 10 or -4

H. $\frac{40}{3}$ or $\frac{1}{4}$

17. Use the given table of values for a linear function to determine the equation of this line in slope-intercept form

x	y
0	0
2	-7
4	-14
6	-21
8	-28

A. The equation of the line is $f(x) = -\frac{9}{2}x + 5$.

B. The equation of the line is $f(x) = -\frac{1}{2}x + 4$.

C. The equation of the line is $f(x) = -\frac{7}{2}x$.

D. The equation of the line is $f(x) = -\frac{11}{2}x - 2$.

E. The equation of the line is $f(x) = \frac{1}{2}x - 4$.

F. The equation of the line is $f(x) = -\frac{5}{2}x + 1$.

G. The equation of the line is $f(x) = -\frac{15}{2}x - 1$.

H. The equation of the line is $f(x) = -\frac{3}{2}x - 5$.

18. Factor the following quadratic polynomial. $\phi^2 - 18\phi - 36$

A. $(\phi - 6)(\phi - 6)$

B. Not factorable. This trinomial is prime.

C. $(\phi - 7)(\phi + 6)$

D. $(\phi - 6)(\phi + 6)$

E. $(\phi + 7)(\phi - 6)$

F. $(\phi + 6)(\phi + 6)$

G. $(\phi - 7)(\phi - 6)$

H. $(\phi + 7)(\phi + 6)$

19. Calculate the slope m of a line passing through the points $(4, 2)$ and $(-8, -3)$

A. $-\frac{1}{4}$

B. $-\frac{1}{3}$

C. $\frac{3}{4}$

D. $\frac{5}{12}$

E. $\frac{13}{12}$

F. $\frac{2}{3}$

G. Undefined

H. $\frac{11}{12}$

20. Factor the polynomial by grouping. $b\alpha + bx + 6\alpha + 6x$

A. $(b - 6)(\alpha + x)$

B. $(x + 6)(\alpha + b)$

C. $(b + \alpha)(6 + x)$

D. $(\alpha + 6)(b + x)$

E. $(x - 6)(\alpha + b)$

F. $(\alpha + 6)(b - x)$

G. $(b + 6)(\alpha + x)$

H. $(b + x)(\alpha + 6)$

Answers

1. C.
2. C.
3. E.
4. F.
5. C.
6. H.
7. F.
8. E.
9. C.
10. H.
11. F.
12. D.
13. D.
14. E.
15. C.
16. A.
17. C.
18. B.
19. D.
20. G.