1. Solve the following linear system by the addition method. $\left\{ \begin{array}{r} -\frac{x}{4} - \frac{y}{6} = \frac{1}{6} \\ -\frac{x}{4} + \frac{y}{2} = -\frac{1}{2} \end{array} \right\}$

A. $(3, 2)$.

B. There is no solution.

C. There are infinitely many solutions.

D. $(0, -1)$.

E. $(-1, -2)$.

F. $(1, 0)$.

G. $(-3, -4)$.

H. $(2, 1)$.

2. Expand the square. $(7c - 3\alpha)^2$

A. $49c^2 - 21c\alpha + 9\alpha^2$

B. $49c^2 + 9\alpha^2$

C. $49c^2 + 42c\alpha - 9\alpha^2$

D. $49c^2 - 42c\alpha + 9\alpha^2$

E. $49c^2 - 9\alpha^2$

3. Factor the following quadratic polynomial. $4\beta^2 + 10\beta + 5$

A. $(4\beta - 1)(\beta - 5)$

B. $(4\beta - 1)(\beta + 5)$

C. $(4\beta + 1)(\beta - 5)$

D. Not factorable. This trinomial is prime.

E. $(4\beta + 1)(\beta + 5)$

F. $(2\beta + 1)(2\beta + 5)$

G. $(2\beta - 1)(2\beta - 5)$

H. $(2\beta - 1)(2\beta + 5)$

4. Simplify the expression. $\left(\frac{7\gamma^6\beta^7}{15\gamma^3\beta^2}\right)\left(\frac{3\gamma^8\beta^9}{12\gamma^5\beta^4}\right)$

A. $\frac{5}{24}\gamma^6\beta^{14}$

B. $\frac{5}{24}\gamma^{12}\beta^{10}$

C. $\frac{5}{24}\gamma^{12}\beta^{14}$

D. $\frac{7}{60}\gamma^{12}\beta^{14}$

E. $\frac{7}{60}\gamma^6\beta^{14}$

F. $\frac{7}{60}\gamma^{12}\beta^{10}$

G. $\frac{7}{60}\gamma^6\beta^{10}$

H. $\frac{5}{24}\gamma^6\beta^{10}$

5. Choose the ordered pair below which is a solution to the system of linear equations $\left\{ \begin{array}{l} x - 2y = 2 \\ 3x - 5y = -2 \end{array} \right\}$

A. $(-14, -8)$.

B. $(-15, -9)$.

C. $(-17, -11)$.

D. $(-16, -10)$.

E. $(-13, -7)$.

F. $(-12, -6)$.

6. Simplify the expression by using the quotient rule for square roots. $\sqrt{\frac{3}{169}}$

A. $\frac{13\sqrt{3}}{3}$

B. $\frac{3\sqrt{13}}{13}$

C. $\frac{13}{3}$

D. $\frac{3}{13}$

E. $\frac{\sqrt{3}}{13}$

F. $\frac{3}{\sqrt{13}}$

G. $\frac{13}{\sqrt{3}}$

H. $\frac{\sqrt{13}}{3}$

7. Solve the following equation $|4x + 5| = 0$.

A. $-\frac{5}{4}$

B. 5

C. 5 or -5

D. $\frac{5}{2}$ or $-\frac{5}{8}$

E. $\frac{5}{8}$ or $\frac{5}{12}$

F. $-\frac{5}{12}$ or $\frac{5}{4}$

G. $-\frac{15}{4}$ or $\frac{5}{8}$

H. $\frac{5}{12}$ or $-\frac{5}{12}$

8. Completely factor each polynomial using the strategy outlined in Section 6.5 in your textbook. $r^4 - \phi^4$

A. $(r - \phi)^2(r - \phi)^2$

B. $(r^2 + \phi^2)(r^2 + \phi^2)$

C. $(r^2 + \phi^2)(r^2 - \phi^2)$

D. $(r^2 + \phi^2)(r + \phi)(r + \phi)$

E. $(r^2 + \phi^2)(r + \phi)(r - \phi)$

F. $(r + \phi)^2(r - \phi)^2$

G. $(r - \phi)^2(r + \phi)^2$

H. $(r^2 + \phi^2)(r - \phi)(r - \phi)$

9. Determine the slope and y-intercept of the line $f(x) = -\frac{3}{5}x - \frac{5}{9}$.

A. The slope is $(0, -\frac{5}{9})$ and the y-intercept is $-\frac{5}{3}$.

B. The slope is $(0, -\frac{3}{5})$ and the y-intercept is $-\frac{5}{9}$.

C. The slope is $(0, -\frac{5}{3})$ and the y-intercept is $-\frac{5}{9}$.

D. The slope is $-\frac{3}{5}$ and the y-intercept is $(0, -\frac{5}{9})$.

E. The slope is $-\frac{5}{9}$ and the y-intercept is $(0, -\frac{5}{3})$.

F. The slope is $-\frac{5}{3}$ and the y-intercept is $(0, -\frac{5}{9})$.

G. The slope is $(0, -\frac{5}{9})$ and the y-intercept is $-\frac{3}{5}$.

H. The slope is $-\frac{5}{9}$ and the y-intercept is $(0, -\frac{3}{5})$.

10. Factor out the GCF. $6p^7 + 20p^3 - 10p$

A. $p^2(4p^2 + 4 - 4p^2)$

B. $2p^3(p^5 + 2p^2 - 2)$

C. $p^3(p^2 + 2 - 4p^5)$

D. $2p^5(4 + 4p^4 - 2p^2)$

E. $2p^4(4 + 4p^3 - 2p^4)$

F. $2p(3p^6 + 10p^2 - 5)$

G. $3p(p^5 + 2p^2 - 2)$

H. $p^5(2p^2 + 2 - 4p^2)$

11. A small building contractor plans to add a bricklayer to his full-time crew. He has two bricklayers on a current job that he is considering for this position. On Monday, he observed that these two bricklayers each worked 7 hours and laid a total of 3487 bricks. On Tuesday, the older bricklayer worked 6 hours, the younger bricklayer worked 9 hours, and they laid a total of 3547 bricks. Determine for the contractor the rate of work for each bricklayer, assuming that both bricklayers work at a fairly consistent rate. Round your answer to the nearest brick per hour.

A. The younger bricklayer laid 187 bricks/hour, and the older laid 321 bricks/hour.

B. The younger bricklayer laid 195 bricks/hour, and the older laid 302 bricks/hour.

C. The younger bricklayer laid 176 bricks/hour, and the older laid 310 bricks/hour.

D. The younger bricklayer laid 177 bricks/hour, and the older laid 305 bricks/hour.

E. The younger bricklayer laid 183 bricks/hour, and the older laid 303 bricks/hour.

F. The younger bricklayer laid 186 bricks/hour, and the older laid 312 bricks/hour.

G. The younger bricklayer laid 184 bricks/hour, and the older laid 311 bricks/hour.

H. The younger bricklayer laid 179 bricks/hour, and the older laid 313 bricks/hour.

12. Write the expression in exponential form. $(p+q)\cdot(p+q)\cdot(p+q)\cdot(p+q)\cdot(p+q)\cdot(p+q)\cdot(p+q)$

A. $1p+q^6$

B. $(p+q)^7$

C. $7(p+q)$

D. $7p+q$

E. $7p+q^7$

F. $p+q^7$

13. Solve the quadratic equation by completing the square. (Don't simplify the radical expression.)

$$\beta^2 - 17\beta - 4 = 0$$

A. $\beta = -\frac{17}{2} \pm \sqrt{36}$

B. $\beta = -\frac{17}{2} \pm \sqrt{92}$

C. $\beta = \frac{17}{2} \pm \sqrt{13}$

D. $\beta = \frac{17}{2} \pm \sqrt{\frac{89}{4}}$

E. $\beta = -\frac{17}{2} \pm \sqrt{110}$

F. $\beta = \frac{17}{2} \pm \sqrt{\frac{305}{4}}$

G. $\beta = -\frac{17}{2} \pm \sqrt{43}$

H. $\beta = \frac{17}{2} \pm \sqrt{9}$

14. Solve the following linear inequality $-2x + 2 \geq 5$.

A. $x \leq -\frac{3}{2}$

B. $x \leq -\frac{3}{4}$

C. $\frac{9}{2} \geq x$

D. $\frac{1}{2} \geq x$

E. $x \leq -3$

F. $\frac{3}{4} \geq x$

G. $x \leq \frac{3}{8}$

H. $-\frac{3}{8} \geq x$

15. Evaluate the expression. $\left(\frac{1}{4}+\frac{1}{6}\right)^{-1}$

A. $\frac{1}{10}$

B. $-\frac{5}{12}$

C. $-\frac{12}{5}$

D. $-\frac{1}{10}$

E. -10

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

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

H. 10

16. Solve the following linear inequality $x - 5 < -x$.

A. $x < -\frac{15}{2}$

B. $x < \frac{5}{6}$

C. $x < \frac{5}{2}$

D. $\frac{5}{8} > x$

E. $x < 5$

F. $x < -\frac{5}{4}$

G. $-10 > x$

H. $10 > x$

17. Solve the following linear system by substitution. $\left\{ \begin{array}{l} -2x - y = 0 \\ 2x + y = -8 \end{array} \right\}$

A. There are infinitely many solutions.

B. $(-4, 0)$.

C. $(-5, -1)$.

D. $(0, 4)$.

E. $(3, 7)$.

F. $(2, 6)$.

G. There is no solution.

H. $(-2, 2)$.

18. A section of road has a 1.5% grade. What is the change in elevation on this section of road covering a horizontal distance of 2000 yd?

A. The change in elevation is 80 yd.

B. The change in elevation is 70 yd.

C. The change in elevation is 90 yd.

D. The change in elevation is 50 yd.

E. The change in elevation is 20 yd.

F. The change in elevation is 100 yd.

G. The change in elevation is 60 yd.

H. The change in elevation is 30 yd.

19. Construct a quadratic equation with the following solutions $\xi = \frac{2}{11}$ or $\xi = -\frac{3}{5}$.

A. $25\xi^2 + 5\xi + 39 = 0$

B. $25\xi^2 - 5\xi + 39 = 0$

C. $55\xi^2 + 23\xi - 6 = 0$

D. $6\xi^2 - 9\xi - 35 = 0$

E. $6\xi^2 + 9\xi - 35 = 0$

F. $15\xi^2 + 1\xi + 119 = 0$

G. $55\xi^2 - 23\xi - 6 = 0$

H. $15\xi^2 - 1\xi + 119 = 0$

20. Factor the polynomial. $49\phi^2 - b^2$

A. $(7\phi + b)(7\phi - b)$

B. $(7\phi + 1)(7b + 1)$

C. $(7\phi + b)(7\phi + b)$

D. Not factorable.

E. $(7\phi - b)(7\phi - b)$

F. $(7\phi - 1)(7b + 1)$

G. $(\phi - 6)(5\phi - 4)$

H. $(49\phi + b)(49\phi - b)$

Answers

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