ALGEBRA 2 PRACTICE TEST 1

Name_____ Date_____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. $4^{\sqrt{2}} \times 4^{\sqrt{2}} =$

(**A**) 8 (**B**) 16 (**C**) 16^2 (**D**) $16^{2\sqrt{2}}$ (**E**) $4^{2\sqrt{2}}$

2. Simplify $q^{-2}r^3p^4r^{-3}p^{-6}q^{-6}$

(**A**) $q^{-8}p^{-2}r$ (**B**) $q^{12}p^{-24}r^{-9}$ (**C**) q^4p^{-2} (**D**) $q^{-8}p^{-2}$ (**E**) $q^{-4}p^{-2}$

3. Solve $-7-3x=-7$

(**A**) $-\frac{14}{3}$ (**B**) 0 (**C**) $\frac{14}{3}$ (**D**) 3 (**E**) undefined

4. Expand $-5t(-4v+3w)$

(**A**) $20tv+3w$ (**B**) $20tv+15tw$ (**C**) $-20tv-15tw$ (**D**) $20tv-15tw$ (**E**) $-20tv+15tw$

5. Solve $40\%x=24$

(**A**) 9.6 (**B**) 40 (**C**) 60 (**D**) 80 (**E**) 96

6. Which of the following is equivalent to $\frac{a^2}{8}+\frac{a}{6}$?

(**A**) $\frac{a^3}{14}$ (**B**) $\frac{7a}{24}$ (**C**) $\frac{7a^2}{24}$ (**D**) $\frac{7a^3}{24}$ (**E**) $\frac{3a^2+4a}{24}$

7. Solve $2\frac{1}{2}\left(3\frac{1}{2}-2\right)+2x=-2\frac{1}{2}\left(2-3\frac{1}{2}\right)+3x+4$

(**A**) -4 (**B**) 0 (**C**) 4 (**D**) 6 (**E**) undefined

8. If $\frac{a}{\frac{1}{3}}=4$, then $\frac{a}{\frac{2}{3}}=$

(**A**) $\frac{1}{2}$ (**B**) $\frac{8}{9}$ (**C**) 2 (**D**) 8 (**E**) 18

9. Simplify $\frac{2.7^2}{-2.7^2+2.7^2}$

(**A**) 0 (**B**) $\frac{1}{2}$ (**C**) $\frac{10}{27}$ (**D**) 2 (**E**) undefined

10. 8 less than twice the sum of a number and 10 is twice the opposite of the number. Find the number.

(**A**) $-\frac{10}{3}$ (**B**) $-\frac{1}{2}$ (**C**) -3 (**D**) 0 (**E**) undefined

11. $8b-4$ quarts equals how many gallons?

(**A**) $2b-4$ (**B**) $2b-1$ (**C**) $4b-2$ (**D**) $8b-1$ (**E**) $32b-16$

12. If an old computer can solve 100 math problems in *s* hours and a new computer can solve the same problems in *h* seconds, how much time, in *hours*, will you save if you use the new computer instead of the old computer?

(**A**) $s-3600h$ (**B**) $s-60h$ (**C**) $3600s-h$ (**D**) $60s-h$ (**E**) $s-\frac{h}{3600}$

13. $\sqrt{\frac{1}{9}+\frac{1}{16}}=$

(A) $\frac{1}{3}+\frac{1}{8}$ **(B)** $\frac{1}{3}+\frac{1}{4}$ **(C)** $\frac{1}{3}\times\frac{1}{4}$ **(D)** $\frac{5}{12}$ **(E)** $\frac{5}{144}$

14. Find the average of the following three algebraic expressions: $4l^3+3l^2$, $-7l^3-l$, and $-9l^2-11l$

(A) $-l^3-2l^2-4l$ **(B)** $-l^3+2l^2-4l$ **(C)** $-l^3-2l^2+4l$ **(D)** l^3-2l^2-4l **(E)** $\frac{11l^3+12l^2+10l}{3}$

15. If a school contains *t* students of which *s* are girls, which of the following would be equivalent to the ratio of boys to girls?

(A) $\frac{-3st}{-3t^2+3st}$ **(B)** $\frac{-3s^2}{-3st+3s^2}$ **(C)** $\frac{-3st-3s^2}{-3s^2}$ **(D)** $\frac{-3st+3t^2}{3st}$ **(E)** $\frac{-3t+3st}{-3s}$

16. Simplify $\left(6a-3b-5a+4b\right)\div\frac{\left(8a-b-7a+2b\right)}{\left(-4a-2b+b+5a\right)}$.

(A) $a-b$ **(B)** $a+b$ **(C)** $b-a$ **(D)** $\frac{a}{b}$ **(E)** $\frac{b}{a}$

17. If one square has a length of $\left(k-4\right)$ inches and another square has a length of $\left(k-9\right)$ inches, what is the difference between the two areas in square inches?

(A) 25 **(B)** $10k-10$ **(C)** $10k-65$ **(D)** $10k+97$ **(E)** $18k-65$

18. If $8\left(14\pi-\sqrt{3y}\right)=\frac{16}{3}$, what is the value of $\frac{14\pi-\sqrt{3y}}{4}$?

(A) $\frac{1}{6}$ **(B)** $\frac{4}{3}$ **(C)** $\frac{8}{3}$ **(D)** $\frac{32}{3}$ **(E)** $\frac{512}{3}$

19. Solve $\frac{x}{2\frac{1}{4}}=36$

(A) $\frac{1}{81}$ **(B)** $\frac{1}{16}$ **(C)** 16 **(D)** 78 **(E)** 81

20. Solve $2\left(4x-3\right)=14+8x$

(A) 0 **(B)** 8 **(C)** 20 **(D)** any real number **(E)** no real number

21. The area of a rectangle is $xy-4zx+2y-8z$ and the length is $x+2$. Find the ratio of the length to the width.

(A) $\frac{x}{y+2z}$ **(B)** $\frac{x+2}{y+4z}$ **(C)** $\frac{x+2}{-y-4z}$ **(D)** $\frac{x+2}{4z-y}$ **(E)** $\frac{x+2}{y-4z}$

22. If $\frac{6r-4k}{3}=4$ and $3r+4k=8$, find the value of $\frac{9}{5}r$.

(A) 4 **(B)** 6 **(C)** 9 **(D)** 18 **(E)** 27

23. $7.\overline{12}$ is what type of number?

(A) natural **(B)** whole **(C)** integer **(D)** irrational **(E)** rational

24. Simplify $\frac{2a+2b-2c}{5c+a+b-6c}$

(A) 2 **(B)** 6 **(C)** $a+b-c$ **(D)** $2\left(a+b-c\right)$ **(E)** $2a+2b-\frac{2}{5}c$

25. The volume of a sphere is equal to $\frac{4}{3}\pi r^3$ where *r* is the radius. How many times greater is the volume if the diameter of the sphere is doubled?

(A) 2 **(B)** 4 **(C)** 6 **(D)** 8 **(E)** 10

ALGEBRA 2 PRACTICE TEST 2

Name_____ Date_____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. Which is the largest number?

(**A**) $-37\frac{2}{3}$ (**B**) -37.6 (**C**) -37.12 (**D**) $-37\frac{17}{24}$ (**E**) $-37\frac{33}{48}$

2. $16.7\overline{45}$ is an element of what set(s) of numbers?

I. Irrational II. Rational III. Real

(**A**) I (**B**) II (**C**) III (**D**) I and III (**E**) II and III

3. Simplify $\left(a^{y+4}\right)^2$

(**A**) a^{2y+8} (**B**) $a^{y^2+8y+16}$ (**C**) a^{y^2+16} (**D**) a^{y^2+8} (**E**) a^{y+6}

4. Which point does not satisfy the linear equation $y=-\frac{2}{3}x+3$?

(**A**) $(-6,7)$ (**B**) $(0,3)$ (**C**) $(12,-5)$ (**D**) $(-9,-6)$ (**E**) $(3,1)$

5. Evaluate $g-h(-g-h)$ if $g=-5$ and $h=-2$.

(**A**) -49 (**B**) -21 (**C**) -19 (**D**) 1 (**E**) 9

6. In *k* more years, Sue will be *h* years old. How old was Sue *j* years ago?

(**A**) $h-k-j$ (**B**) $k-h-j$ (**C**) $h+k-j$ (**D**) $h-k+j$ (**E**) $h-k$

7. If $x^{\frac{3}{4}}y^{\frac{2}{3}}=16$, find the value of $\frac{1}{x^{\frac{3}{4}}}$ when $y^{\frac{2}{3}}$ equals 2.

(**A**) $\frac{1}{14}$ (**B**) $\frac{1}{8}$ (**C**) 8 (**D**) 14 (**E**) 32

8. $4a^2-\frac{3}{a}$ is equivalent to which of the following?

(**A**) a (**B**) a^2 (**C**) $3\frac{2}{3}a$ (**D**) $4a-3$ (**E**) $\frac{4a^3-3}{a}$

9. Given $\frac{40\%}{x}+\frac{40\%}{x}=80$. Find *x*.

(**A**) 0.0025 (**B**) 0.005 (**C**) 0.01 (**D**) 0.1 (**E**) 1

10. If $m=-3k^4-2k^3+4k^2+1$ and $n=6k^4-8k^3-10k^2-5$, find the value of $m-n$.

(**A**) $-9k^4+6k^3-6k^2+6$ (**B**) $-9k^4-10k^3-6k^2-4$ (**C**) $-9k^4-10k^3+14k^2+6$

(**D**) $-9k^4+6k^3+14k^2+6$ (**E**) $-9k^4+6k^3+14k^2-4$

11. If $\left[(x-y)^{0.25}\right]^4-7=-28.12$, find the value of $3+\left[(x-y)^{0.25}\right]^4$.

(**A**) -38.12 (**B**) -32.12 (**C**) -24.12 (**D**) -21.12 (**E**) -18.12

12. Find the value of $\left(\sqrt[3]{-x^2-4x}\right)^3$ if $2-x=4$.

(**A**) 0 (**B**) 1 (**C**) 4 (**D**) 10 (**E**) 12

13. Solve $\frac{u_1w_1}{v_1}=\frac{u_2w_2}{v_2}$ for v_2.

(**A**) $\frac{u_2v_1w_2}{u_1w_1}$ (**B**) $\frac{u_1w_1}{u_2v_1w_2}$ (**C**) $\frac{u_1v_1w_1}{u_2w_2}$ (**D**) $\frac{u_2w_2}{u_1v_1w_1}$ (**E**) $\frac{u_1v_1u_2}{w_1w_2}$

14. If $v = -0.5$, then which of the following is true?

(A) $\frac{1}{v^8} < \frac{1}{v^9} < \frac{1}{v^{10}}$ **(B)** $\frac{1}{v^{10}} < \frac{1}{v^9} < \frac{1}{v^8}$ **(C)** $\frac{1}{v^{10}} < \frac{1}{v^8} < \frac{1}{v^9}$ **(D)** $\frac{1}{v^9} < \frac{1}{v^8} < \frac{1}{v^{10}}$ **(E)** $\frac{1}{v^9} < \frac{1}{v^{10}} < \frac{1}{v^8}$

15. If $\frac{12}{4x^2-9} = 6$, then $\frac{(2x-3)(2x+3)}{12} + 7 =$

(A) $1\frac{1}{6}$ **(B)** $7\frac{1}{6}$ **(C)** 9 **(D)** 11 **(E)** 13

16. If $(a^2 + c^2) + d = e + f$, then $\frac{(a^2+c^2)^2}{5} =$

(A) $\frac{(e+f-d)^2}{5}$ **(B)** $\frac{(e+f-d)^2}{25}$ **(C)** $\frac{(e+f+d)^2}{5}$ **(D)** $\frac{(e+f)^2}{5d}$ **(E)** $\frac{(e+f)^2}{25d^2}$

17. Given $\frac{-1}{x-3} = \frac{1}{y+2}$, what is the value of $x-1$?

(A) $-y+4$ **(B)** $y+4$ **(C)** $y-1$ **(D)** $-y$ **(E)** y

18. If $16 - 8\sqrt[3]{\frac{g+h}{j+k}} = 4\sqrt[3]{\frac{g+h}{j+k}} - 8$, then $\sqrt[3]{\frac{g+h}{j+k}} - 6 =$

(A) $-5\frac{1}{3}$ **(B)** -4 **(C)** 0 **(D)** 2 **(E)** 6

19. Find the value of x if $\frac{\left(\frac{x^2-x-6}{x-3}\right)^4}{\left(\frac{x^2-3x-10}{x-5}\right)^3} = 6$ where $x \neq -2, 3, 5$.

(A) -3 **(B)** 1 **(C)** 0 **(D)** 4 **(E)** 5

20. What fraction of $4x^6$ is $2x^2$?

(A) $\frac{2}{x^{-4}}$ **(B)** $\frac{2}{x^4}$ **(C)** $\frac{1}{2x^4}$ **(D)** $\frac{1}{2x^{-4}}$ **(E)** $2x^4$

21. Solve $2x = \frac{5+6x}{3}$ for x.

(A) -5 **(B)** 0 **(C)** 1 **(D)** 5 **(E)** does not exist

22. If $x = \frac{m^{-4}b^5}{c^{-2}}$ and $c = \frac{m^{-2}}{b^4}$, then $x =$

(A) $m^{-8}b^{-3}$ **(B)** b^{-3} **(C)** $m^{-8}b^{13}$ **(D)** b^{13} **(E)** $m^{-8}b^{-11}$

23. Given $6+2-d+b=2$ and $8+d+2=5-g$, find the value of $\frac{(g+b)^2}{2}$.

(A) 12.5 **(B)** 18 **(C)** 32 **(D)** 50 **(E)** 60.5

24. If the mixed fraction $a\frac{b}{c}$ is greater than the mixed fraction $x\frac{y}{c}$, find the value of $a\frac{b}{c} - x\frac{y}{c}$.

(A) $\frac{acb-xcy}{c}$ **(B)** $\frac{xc+y-ac+b}{c}$ **(C)** $\frac{xc+y-ac-b}{c}$ **(D)** $\frac{ac+b-xc+y}{c}$ **(E)** $\frac{ac+b-xc-y}{c}$

25. If golf balls cost y dollars each, how many can you buy if you have x cents?

(A) $\frac{100x}{y}$ **(B)** $\frac{x}{y}$ **(C)** $\frac{y}{x}$ **(D)** $\frac{y}{100x}$ **(E)** $\frac{x}{100y}$

ALGEBRA 2 PRACTICE TEST 3

Name_____ Date_____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. If you bought *c* stamps with *d* dollars, how many cents was each stamp?

(A) $\frac{d}{c}$ **(B)** $\frac{100d}{c}$ **(C)** $\frac{100c}{d}$ **(D)** $\frac{c}{d}$ **(E)** $\frac{c}{100d}$

2. You have *m* dollars made up of nickels and dimes. If there are *y* more nickels than dimes, which two equations would best represent this problem? Let *n* represent the number of nickels and *d* represent the number of dimes.

(A) $\begin{cases} n = d + y \\ 5n + 10d = 100m \end{cases}$ **(B)** $\begin{cases} n = d + y \\ 5n + 10d = m \end{cases}$ **(C)** $\begin{cases} n + d = y \\ 5n + 10d = 100m \end{cases}$ **(D)** $\begin{cases} d = n + y \\ 5n + 10d = 100m \end{cases}$ **(E)** $\begin{cases} d = n + y \\ 5n + 10d = m \end{cases}$

3. $\frac{2}{a+b} - \frac{2}{b} =$

(A) $\frac{2}{a}$ **(B)** $\frac{-a}{a+b}$ **(C)** $\frac{a}{a+b}$ **(D)** $\frac{-2a}{ab+b^2}$ **(E)** $\frac{4b-2a}{ab+b^2}$

4. If $x-4$ is a multiple of 13, which of the following is also a multiple of 13?

(A) $x+13$ **(B)** $x-13$ **(C)** $x+22$ **(D)** $x-26$ **(E)** $x+8$

5. Which of the following is $\sqrt{\frac{1}{x}} + \sqrt{\frac{1}{x}}$ equivalent to?

(A) $\frac{1}{\sqrt{x}}$ **(B)** $\frac{2}{\sqrt{x}}$ **(C)** $\frac{1}{2\sqrt{x}}$ **(D)** $\frac{1}{x}$ **(E)** $\frac{2}{x}$

6. Which of the following points is a member of the solution set for the following system?

$$\begin{cases} -3y - 2x > -6 \\ x \le -2 \end{cases}$$

(A) $(-3,4)$ **(B)** $(-6,7)$ **(C)** $(-9,8)$ **(D)** $(0,2)$ **(E)** $(-12,9)$

7. If the smallest of three consecutive odd integers is $\frac{g-3}{5}$, which of the following is equivalent to the largest of the three consecutive odd integers?

(A) $\frac{g+1}{5}$ **(B)** $\frac{g+7}{5}$ **(C)** $\frac{g+12}{5}$ **(D)** $\frac{g+17}{5}$ **(E)** $\frac{g+22}{5}$

8. Which of the following is not a function?

I. $\{(0,1),(1,2)(2,2)\}$ II. $x^2 = y$ III. $x = 0$

(A) I **(B)** II **(C)** III **(D)** I and II **(E)** II and III

9. Find the distance between $(-r, t-5)$ and $(-r, 2t+5)$ assuming $2t+5 > t-5$.

(A) 0 **(B)** t **(C)** $t+10$ **(D)** $3t$ **(E)** $3t+10$

10. Find the midpoint of $(-7c, 8d)$ and $(-23c, -18d)$.

(A) $(-15c, -5d)$ **(B)** $(-8c, -5d)$ **(C)** $(-15c, 13d)$ **(D)** $(-8c, 13d)$ **(E)** $\sqrt{(-16c)^2 + (-26d)^2}$

11. Simplify $\frac{6\left(\sqrt{5}\right)^3 - 12\left(\sqrt{5}\right)^5}{6\left(\sqrt{5}\right)^3}$

(A) $-12\left(\sqrt{5}\right)^5$ **(B)** $1 - 12\left(\sqrt{5}\right)^5$ **(C)** $1 - 6\left(\sqrt{5}\right)^2$ **(D)** $-11\left(\sqrt{5}\right)^5$ **(E)** -9

12. Which is the largest number?

(A) $3\sqrt{5}$ **(B)** $5\sqrt{2}$ **(C)** $4\sqrt{3}$ **(D)** $2\sqrt{11}$ **(E)** 7

13. When $2t^4 - 1$ is divided by $t+2$, what is the remainder?

(A) $\frac{-33}{t+2}$ **(B)** $\frac{-31}{t+2}$ **(C)** $\frac{-29}{t+2}$ **(D)** $\frac{29}{t+2}$ **(E)** $\frac{31}{t+2}$

14. If $c+d+1=0$ and $(a+b)(c+d)^3-9(c+d)+4=0$, find the value of $a+b$?

(A) -5 **(B)** 5 **(C)** -13 **(D)** 13 **(E)** $\frac{13}{3}$

15. If $h=g^{-2}j^3$ and $k=g^5h^4j^2$, then $k=$

(A) $g^{-3}j^{14}$ **(B)** $g^{-3}j^{15}$ **(C)** $g^{-1}j^{14}$ **(D)** $g^{21}j^{14}$ **(E)** $g^{21}j^{83}$

16. If $\frac{w^4v^5}{u^3}>0$, which of the following does not have to be positive?

(A) $u^9v^7w^2$ **(B)** $w^6v^9u^6$ **(C)** $v^6w^8u^{12}$ **(D)** $w^6v^{11}u^{19}$ **(E)** $w^{10}v^2u^2$

17. If $p+q<r-t<w-v$, and $z<0$, which of the following must be false?

I. $zr-zt>zp+zq$ II. $zp+zq<zw-zv$ III. $zr-zt>zw-zv$

(A) I **(B)** II **(C)** III **(D)** I and II **(E)** II and III

18. If $(w+z)(t+v)=x+y$, then $\frac{w+z}{t+v}=$

(A) $\frac{t+v}{x+y}$ **(B)** $\frac{x+y}{t+v}$ **(C)** $\left(\frac{t+v}{x+y}\right)^2$ **(D)** $\frac{(x+y)^2}{t+v}$ **(E)** $\frac{x+y}{(t+v)^2}$

19. If $m+n=\frac{x^2-9}{x^3-x^2-12x}$ and $p-r=\frac{x-3}{x^3+4x^2}$, find the value of $\frac{m+n}{p-r}$.

(A) $\frac{x(x+4)}{x-4}$ **(B)** $\frac{x^2(x+4)}{x-4}$ **(C)** $\frac{x(x+4)(x+3)}{x-3}$ **(D)** $\frac{x(x+4)(x-3)}{x+3}$ **(E)** x

20. $\left(x^{y-3}\right)^{y+3}=$

(A) x^{2y} **(B)** x^6 **(C)** x^{y-9} **(D)** x^{y^2-6y-9} **(E)** x^{y^2-9}

21. Solving the following system for x by substitution would yield which equation in the process?

$$\begin{cases}3x-2y=4\\4x-y=7\end{cases}$$

(A) $3x+8x+14=4$ **(B)** $3x+8x-14=4$ **(C)** $3x-8x-9=4$ **(D)** $3x-8x-14=4$ **(E)** $3x-8x+14=4$

22. $\left(\sqrt{5\frac{3}{16}}\right)^6\cdot\frac{1}{\left(\sqrt{6-\frac{13}{16}}\right)^2}=$

(A) 3 **(B)** $5\frac{3}{16}$ **(C)** $\left(\sqrt{5\frac{3}{16}}\right)^3$ **(D)** $\left(5\frac{3}{16}\right)^2$ **(E)** $\left(5\frac{3}{16}\right)^4$

23. Find the value of $\frac{b+c+d}{2}$ for the following system: $\begin{cases}2b-(c+d)=10\\c+d=-2b-2\end{cases}$

(A) -4 **(B)** -3 **(C)** -2 **(D)** -1 **(E)** $-\frac{1}{2}$

24. If the sum of three consecutive odd integers is $3+x$, what is the largest of the three integers?

(A) $3x+9$ **(B)** $\frac{x-3}{3}$ **(C)** $\frac{x+1}{3}$ **(D)** $\frac{x+6}{3}$ **(E)** $\frac{x+9}{3}$

25. $-4\left(\frac{\sqrt[3]{y+z}}{w}\right)^2+4\left(\frac{\sqrt[3]{y+z}}{w}\right)+48$ is equivalent to

(A) $-4\left(\frac{\sqrt[3]{y+z}}{w}-4\right)\left(\frac{\sqrt[3]{y+z}}{w}-3\right)$ **(B)** $-4\left(\frac{\sqrt[3]{y+z}}{w}-4\right)\left(\frac{\sqrt[3]{y+z}}{w}+3\right)$ **(C)** $-4\left(\frac{\sqrt[3]{y+z}}{w}+4\right)\left(\frac{\sqrt[3]{y+z}}{w}-3\right)$

(D) $-4\left(\frac{\sqrt[3]{y+z}}{w}+4\right)\left(\frac{\sqrt[3]{y+z}}{w}+3\right)$ **(E)** $-4\left(\frac{\sqrt[3]{y+z}}{w}-6\right)\left(\frac{\sqrt[3]{y+z}}{w}+2\right)$

ALGEBRA 2 PRACTICE TEST 4

Name_____ Date_____

Directions: Complete as many problems as you can in the 30 minutes allotted to you. No calculators!

1. If $64r+32$ is an even number, what is the sum of the largest even number less than $64r+32$ and the smallest odd number greater than $64r+32$?

(**A**) $128r+63$ (**B**) $128r+64$ (**C**) $128r+65$ (**D**) $64r+64$ (**E**) $64r+65$

2. Ten more than twice a number is eight less than three times the same number can be written which of the following ways?

(**A**) $10+2n=3n-8$ (**B**) $10+n\cdot n=3n-8$ (**C**) $10+2n=8-3n$ (**D**) $10\cdot 2n=3n-8$ (**E**) $10\cdot 2n=8-3n$

3. Solve $6x-9x+12x=15$.

(**A**) $-1\frac{2}{3}$ (**B**) 1 (**C**) $1\frac{2}{3}$ (**D**) 6 (**E**) 135

4. Solve $\frac{18}{11}=\frac{6}{x}$

(**A**) $3\frac{2}{3}$ (**B**) $3\frac{3}{4}$ (**C**) $3\frac{7}{18}$ (**D**) $3\frac{11}{18}$ (**E**) $3\frac{13}{18}$

5. Evaluate $x-yx^2$ if $x=-3$ and $y=2$.

(**A**) -45 (**B**) -21 (**C**) -9 (**D**) 15 (**E**) 45

6. $\left[\left(x+y\right)^{\frac{2}{3}}\right]^2=$

(**A**) $\left(x+y\right)^{\frac{4}{9}}$ (**B**) $\left(x+y\right)^{2\frac{2}{3}}$ (**C**) $\left(x+y\right)^{\frac{4}{3}}$ (**D**) $x^{\frac{4}{3}}+y^{\frac{4}{3}}$ (**E**) $x^{\frac{4}{9}}+y^{\frac{4}{9}}$

7. How much greater is the slope of the line that goes through $(2,3)$ and $(3,7)$ than the slope of the line that goes through $(2,3)$ and $(5,4)$?

(**A**) $-\frac{3}{2}$ (**B**) $-\frac{2}{3}$ (**C**) $\frac{2}{3}$ (**D**) $\frac{3}{2}$ (**E**) $3\frac{2}{3}$

8. Simplify $\sqrt{50}$

(**A**) $2\sqrt{5}$ (**B**) $5\sqrt{2}$ (**C**) $5\sqrt{5}$ (**D**) $25\sqrt{2}$ (**E**) 25

9. If $\frac{1}{m}=\frac{1}{3}+\frac{1}{2}$, find *m*.

(**A**) $\frac{1}{5}$ (**B**) $\frac{5}{6}$ (**C**) $\frac{6}{5}$ (**D**) 5 (**E**) 6

10. What is the total number of feet in *m* miles, *y* yards, and *f* inches?

(**A**) $1760m+3y+\frac{1}{12}f$ (**B**) $1760m+3y+12f$ (**C**) $5280m+3y+12f$ (**D**) $5280m+3y+\frac{1}{12}f$ (**E**) $m+y+f$

11. Which is equivalent to $a+b$ if $a=-3x^2-7x-4$ and $b=4x^2+12x+10$?

(**A**) $(x+2)(x+3)$ (**B**) $(x+6)(x+1)$ (**C**) $(x+3)(x+3)$ (**D**) $(x+2)(x+4)$ (**E**) $(x+2)(x+6)$

12. When the largest of the three consecutive integers is tripled, it will be 18 less than the smallest integer. Find the product of the smallest and largest.

(**A**) 80 (**B**) 110 (**C**) 120 (**D**) 168 (**E**) does not exist

13. If a linear equation goes through $(-2,-1687)$ and has a slope of $-\frac{3}{2}$, find the *y*-intercept.

(**A**) -1690 (**B**) -1689 (**C**) -1688.5 (**D**) -1685 (**E**) -1684

14. Solve the following system for *y*.

$$\begin{cases}7x-8y=0\\11x+13y=0\end{cases}$$

(**A**) 0 (**B**) 1 (**C**) 2 (**D**) 3 (**E**) 4

15. If $4(x-2y)-2-7(x-2y)=-4-2(x-2y)-6$, then $x-2y=$

(**A**) -8 (**B**) 0 (**C**) 8 (**D**) $\frac{8}{5}$ (**E**) undefined

16. What is $lr+lq-pr-pq$ equivalent to?

(**A**) $(l-p)(r+q)$ (**B**) $(l-r)(p+q)$ (**C**) $(l+p)(r-q)$ (**D**) $(l-p)(r-q)$ (**E**) $(l-p)(q-r)$

17. $-6\left(x^{\frac{2}{11}}y^{\frac{3}{13}}\right)^2+13\left(x^{\frac{2}{11}}y^{\frac{3}{13}}\right)-6$ is equivalent to

(**A**) $\left(6x^{\frac{2}{11}}y^{\frac{3}{13}}+6\right)\left(-x^{\frac{2}{11}}y^{\frac{3}{13}}-1\right)$ (**B**) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}}-2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}}+2\right)$ (**C**) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}}-2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}}-3\right)$

(**D**) $\left(-6x^{\frac{2}{11}}y^{\frac{3}{13}}+3\right)\left(x^{\frac{2}{11}}y^{\frac{3}{13}}-2\right)$ (**E**) $\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}}+2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}}-3\right)$

18. The average of three expressions is $-3x^2y^3$. If the first expression is $3x^3y^2-6y^3x^2$ and the second is $x^2y^3-4y^2x^3$, what is the third expression?

(**A**) $x^3y^2-2x^2y^3$ (**B**) $x^3y^2+2x^2y^3$ (**C**) $-4x^2y^3-7x^3y^2$ (**D**) $x^3y^2-4x^2y^3$ (**E**) $-7x^3y^2-2x^2y^3$

19. If the area of a triangle is x^2-y^2 and the base is $x+y$, find the height.

(**A**) $x-y$ (**B**) $2(x-y)$ (**C**) $\frac{x^2-y^2}{x+y}$ (**D**) $\frac{x+y}{x^2-y^2}$ (**E**) $\frac{x-y}{2}$

20. If $3x^2+4y^3-6=0$, then $\frac{1}{4}\sqrt[5]{3x^2+4y^3+26}=$

(**A**) 0 (**B**) $\frac{1}{4}$ (**C**) $\frac{1}{2}$ (**D**) $\frac{3}{4}$ (**E**) 1

21. Solve $\frac{pv}{nt}=r$ for *n*.

(**A**) $\frac{pvt}{r}$ (**B**) $\frac{tr}{pv}$ (**C**) $\frac{pvr}{t}$ (**D**) $\frac{t}{pvr}$ (**E**) $\frac{pv}{tr}$

22. Which ordered pair does not satisfy $y=-x^2+2x-3$?

(**A**) (-1,-6) (**B**) (1,0) (**C**) (-2,-11) (**D**) (2,-3) (**E**) (0,-3)

23. If $a=bc$, then $\frac{b}{c}=$

(**A**) $\frac{a}{c}$ (**B**) $\frac{a^2}{c}$ (**C**) $\frac{c^2}{a^2}$ (**D**) $\frac{a}{c^2}$ (**E**) $\frac{c}{a}$

24. $\sqrt{16}$ is not an element of what set(s) of numbers?

I. rational II. irrational III. integers

(**A**) I only (**B**) II only (**C**) III only (**D**) I and III (**E**) II and III

25. If $4(x+5)(x-5)=60$, Find the value of $\frac{2}{3}(x^2-25)$.

(**A**) 8 (**B**) 9 (**C**) 10 (**D**) 12 (**E**) 15

ALGEBRA 2 TEST 1 ANSWERS

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

1. $4^{\sqrt{2}+\sqrt{2}} = 4^{2\sqrt{2}}$
2. $q^{-8}p^{-2}$
3. $x = \dfrac{0}{-3} = 0$
4. $20tv - 15tw$
5. $0.4x = 24 \rightarrow x = \dfrac{24}{0.4} = 60$
6. $\dfrac{3a^2}{24} + \dfrac{4a}{24} = \dfrac{3a^2 + 4a}{24}$
7. $2x = 3x + 4 \rightarrow x = -4$
8. $4 \times \dfrac{1}{2} = 2$
9. $\dfrac{2.7^2}{0}$ is undefined
10. $2(n+10) - 8 = -2n \rightarrow 4n = -12 \rightarrow n = -3$
11. $\dfrac{8b-4}{4} = 2b - 1$
12. $s - \dfrac{h}{3600}$
13. $\sqrt{\dfrac{1}{9} + \dfrac{1}{16}} = \sqrt{\dfrac{16}{144} + \dfrac{9}{144}} = \sqrt{\dfrac{25}{144}} = \dfrac{5}{12}$
14. $\dfrac{4l^3 + 3l^2 - 7l^3 - l - 9l^2 - 11l}{3} = \dfrac{-3l^3 - 6l^2 - 12l}{3} = -l^3 - 2l^2 - 4l$
15. $\dfrac{-3st + 3t^2}{3st} = \dfrac{-s + t}{s} = \dfrac{t - s}{s}$
16. $\dfrac{6a - 3b - 5a + 4b}{\dfrac{8a - b - 7a + 2b}{-4a - 2b + b + 5a}} = \dfrac{a + b}{\dfrac{a + b}{a - b}} = \dfrac{a + b}{1} \cdot \dfrac{a - b}{a + b} = a - b$
17. $(k-4)^2 - (k-9)^2 = k^2 - 8k + 16 - k^2 + 18k - 81 = 10k - 65$
18. $\dfrac{8\left(14\pi - \sqrt{3y}\right)}{32} = \dfrac{14\pi - \sqrt{3y}}{4} = \dfrac{16}{3} \cdot \dfrac{1}{32} = \dfrac{1}{6}$
19. $x = 2\dfrac{1}{4} \cdot 36 = \dfrac{9}{4} \cdot 36 = 81$
20. $8x - 6 = 14 + 8x \rightarrow 0x = 20 \rightarrow x = \dfrac{20}{0}$ which is undefined or no real number.
21. $xy - 4zx + 2y - 8z = x(y - 4z) + 2(y - 4z) = (x + 2)(y - 4z)$. $\therefore$ the ratio of the length to the width is $\dfrac{x+2}{y-4z}$. If a student did not know how to factor, they could multiply the numerator and denominator of each choice until they arrived at the beginning product.
22. $\dfrac{6r - 4k}{3} = 4 \rightarrow 6r - 4k = 12$ $\begin{cases} 3r + 4k = 8 \\ 6r - 4k = 12 \end{cases}$ Adding columns yields $9r = 20 \rightarrow r = \dfrac{20}{9}$. $\therefore \dfrac{9}{5}r = \dfrac{9}{5} \cdot \dfrac{20}{9} = 4$
23. rational
24. $\dfrac{2a + 2b - 2c}{5c + a + b - 6c} = \dfrac{2(a + b - c)}{a + b - c} = 2$
25. When a diameter is doubled, the radius will become two times longer. Therefore $V = \dfrac{4}{3}\pi(2r)^3 = 8\left(\dfrac{4}{3}\pi r^3\right)$

ALGEBRA 2 TEST 2 ANSWERS

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

1. –37.12

2. rational and real

3. $\left(a^{y+4}\right)^2 = a^{2y+8}$

4. $(-9,-6)$

5. $-5+2(5+2) = -5+14 = 9$

6. $h-k-j$

7. $x^{\frac{3}{4}} = \frac{16}{y^{\frac{2}{3}}} = \frac{16}{2} = 8$. Therefore $\frac{1}{x^{\frac{3}{4}}} = \frac{1}{8}$

8. $4a^2 - \frac{3}{a} = \frac{4a^3-3}{a}$

9. $\frac{40\%}{x} + \frac{40\%}{x} = 80 \rightarrow \frac{80\%}{x} = 80 \rightarrow x = \frac{.80}{80} = 0.01$

10. $-3k^4 - 2k^3 + 4k^2 + 1 - \left(6k^4 - 8k^3 - 10k^2 - 5\right) = -9k^4 + 6k^3 + 14k^2 + 6$

11. $\left[(x-y)^{0.25}\right]^4 = -28.12 + 7 = -21.12 \rightarrow \left[(x-y)^{0.25}\right]^4 + 3 = -18.12$

12. $x = -2$. Therefore $\left(\sqrt[3]{-x^2-4x}\right)^3 = -(-2)^2 - 4(-2) = -4+8 = 4$

13. $u_1 w_1 v_2 = u_2 w_2 v_1 \rightarrow v_2 = \frac{u_2 v_1 w_2}{u_1 w_1}$

14. $\frac{1}{v^9} < \frac{1}{v^8} < \frac{1}{v^{10}}$

15. $\frac{(2x-3)(2x+3)}{12} + 7 = \frac{1}{6} + 7 = 7\frac{1}{6}$

16. $\frac{\left(a^2+c^2\right)^2}{5} = \frac{(e+f-d)^2}{5}$

17. $\frac{-1}{x-3} = \frac{1}{y+2} \rightarrow x-3 = -y-2 \rightarrow x-1 = -y$

18. Let $x = \sqrt[3]{\frac{g+h}{j+k}}$. Therefore $16-8x = 4x-8 \rightarrow x = 2 \rightarrow \sqrt[3]{\frac{g+h}{j+k}} - 6 = 2-6 = -4$

19. $\frac{\left(\frac{x^2-x-6}{x-3}\right)^4}{\left(\frac{x^2-3x-10}{x-5}\right)^3} = 5 \rightarrow \frac{\left(\frac{(x-3)(x+2)}{x-3}\right)^4}{\left(\frac{(x-5)(x+2)}{x-5}\right)^3} = 6 \rightarrow x+2 = 6 \rightarrow x = 4$

20. $\frac{2x^2}{4x^6} = \frac{1}{2x^4}$

21. $6x = 5+6x \rightarrow 0x = 5$ There is no number that can be multuplied by zero to get a 5.

22. $x = m^{-4}b^5c^2 = m^{-4}b^5\left(m^{-2}b^{-4}\right) = m^{-4}b^5m^{-4}b^{-8} = m^{-8}b^{-3}$

23. Simplifying both equations yields $\begin{cases} -d+b = -6 \\ d+g = -5 \end{cases}$. Now adding columns yields $g+b = -11$. Substituting -11 in for $g+b$ of $\frac{(g+b)^2}{2}$ yields $\frac{11^2}{2} = \frac{121}{2} = 60.5$.

24. $a\frac{b}{c} - x\frac{y}{c} = \frac{ac+b}{c} - \frac{xc+y}{c} = \frac{ac+b-xc-y}{c}$ 25. $\frac{x}{100} \div y = \frac{x}{100} \cdot \frac{1}{y} = \frac{x}{100y}$

ALGEBRA 2 TEST 3 ANSWERS

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

1. $\dfrac{100d}{c}$

2. $\begin{cases} n = d + y \\ 5n + 10d = 100m \end{cases}$

3. $\dfrac{2}{a+b} - \dfrac{2}{b} = \dfrac{2b}{b(a+b)} - \dfrac{2(a+b)}{b(a+b)} = \dfrac{-2a}{b(a+b)} = \dfrac{-2a}{ab+b^2}$

4. $x+22$ is 26 greater than $x-4$ and will also be a multiple of 13.

5. $\sqrt{\dfrac{1}{x}} + \sqrt{\dfrac{1}{x}} = \dfrac{1}{\sqrt{x}} + \dfrac{1}{\sqrt{x}} = \dfrac{2}{\sqrt{x}}$

6. $(-12, 9)$

7. $\dfrac{g-3}{5} + 4 = \dfrac{g-3}{5} + \dfrac{20}{5} = \dfrac{g+17}{5}$

8. III

9. $(2t+5) - (t-5) = t+10$

10. $\left(\dfrac{-7c-23c}{2}, \dfrac{8d-18d}{2}\right) \to (-15c, -5d)$

11. $\dfrac{6\left(\sqrt{5}\right)^3 - 12\left(\sqrt{5}\right)^5}{6\left(\sqrt{5}\right)^3} = \dfrac{1 - 2\left(\sqrt{5}\right)^2}{1} = 1 - 10 = -9$

12. $3\sqrt{5} = \sqrt{45};\ 5\sqrt{2} = \sqrt{50};\ 4\sqrt{3} = \sqrt{48};\ 2\sqrt{11} = \sqrt{44};\ 7 = \sqrt{49}$

13. $\dfrac{31}{t+2}$

14. Since $c+d=-1$, then $(a+b)(c+d)^3 - 9(c+d) + 4 = 0 \to (a+b)(-1) - 9(-1) + 4 = 0 \to a+b = 13$

15. $h = g^{-2}j^3$ and $k = g^5h^4j^2 = g^5\left(g^{-2}j^3\right)^4 j^2 = g^{-3}j^{14}$

16. *u* and *v* must have the same sign. Therefore A, D, C, and E must be positive. B could be negative if *u* and *v* are negative.

17. I and II

18. $\dfrac{(w+z)(t+v)}{(t+v)^2} = \dfrac{w+z}{t+v} = \dfrac{x+y}{(t+v)^2}$

19. $\dfrac{x^2-9}{x^3-x^2-12} \times \dfrac{x^3+4x^2}{x-3} = \dfrac{(x-3)(x+3)}{x(x-4)(x+3)} \times \dfrac{x^2(x+4)}{x-3} = \dfrac{x(x+4)}{x-4}$

20. $\left(x^{y-3}\right)^{y+3} = x^{y^2+3y-3y-9} = x^{y^2-9}$

21. Solving $4x - y = 7$ for y yields $y = 4x - 7$. Now substituting $4x-7$ in for y of the other equation and simplifying yields $3x - 2(4x-7) = 4 \ \to \ 3x - 8x + 14 = 4$ which is E.

22. $\left(\sqrt{5\dfrac{3}{16}}\right)^6 \cdot \dfrac{1}{\left(\sqrt{6-\dfrac{13}{16}}\right)^2} = \dfrac{\left(\sqrt{5\dfrac{3}{16}}\right)^6}{\left(\sqrt{5\dfrac{3}{16}}\right)^2} = \left(\sqrt{5\dfrac{3}{16}}\right)^4 = 5\dfrac{3}{16} \cdot 5\dfrac{3}{16}$

23. Substituting $-2b-2$ in for $c+d$ of the top equation results in $2b - (-2b-2) = 10 \to b = 2$. Also, $c+d = -2b-2 = -2(2) - 2 = -6$. Therefore $\dfrac{b+c+d}{2} = \dfrac{2+(-6)}{2} = -2$

24. Let $n, n+2$, and $n+4$ be three consecutive odd integers. $n + (n+2) + (n+4) = 3 + x$. Therefore $n = \dfrac{x-3}{3}$ and

$$n+4 = \frac{x-3}{3} + 4 = \frac{x-3}{3} + \frac{12}{3} = \frac{x+9}{3}$$

25. Think of $-4\left(\dfrac{\sqrt[3]{y+z}}{w}\right)^2 + 4\left(\dfrac{\sqrt[3]{y+z}}{w}\right) + 48$ as $-4x^2 + 4x + 48$ which factors as $-4(x^2 - x - 12) = -4(x-4)(x+3)$. Now substituting back in for *x* yields $-4\left(\dfrac{\sqrt[3]{y+z}}{w} - 4\right)\left(\dfrac{\sqrt[3]{y+z}}{w} + 3\right)$

ALGEBRA 2 TEST 4 ANSWERS

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

1. $(64r+30)+(64r+33)=128r+63$
2. $10+2n=3n-8$
3. $9x=15 \rightarrow x=1\frac{2}{3}$
4. $\frac{66}{18}=3\frac{2}{3}$
5. $x-yx^2=-3-(2)(-3)^2=-3-18=-21$
6. $\left[(x+y)^{\frac{2}{3}}\right]^2=(x+y)^{\frac{4}{3}}$
7. $\frac{7-3}{3-2}-\frac{4-3}{5-2}=4-\frac{1}{3}=3\frac{2}{3}$
8. $\sqrt{50}=5\sqrt{2}$
9. $\frac{1}{m}=\frac{1}{3}+\frac{1}{2} \rightarrow \frac{1}{m}=\frac{5}{6} \rightarrow m=\frac{6}{5}$
10. $5280m+3y+\frac{1}{12}f$
11. $-3x^2-7x-4+4x^2+12x+10=x^2+5x+6=(x+2)(x+3)$
12. $3(n+2)+18=n \rightarrow n=-12 \rightarrow (-12)(-10)=120$
13. -1690
14. 0
15. Let $z=x-2y$. $4z-2-7z=-4-2z-6 \rightarrow z=8=x-2y$
16. $lr+lq-pr-pq=l(r+q)-p(r+q)=(l-p)(r+q)$
17. Let $z=x^{\frac{2}{11}}y^{\frac{3}{13}}$. $-6z^2+13z-6=(-3z+2)(2z-3)=\left(-3x^{\frac{2}{11}}y^{\frac{3}{13}}+2\right)\left(2x^{\frac{2}{11}}y^{\frac{3}{13}}-3\right)$
18. $\frac{\left(3x^3y^2-6y^3x^2\right)+\left(x^2y^3-4y^2x^3\right)+z}{3}=-3x^2y^3 \rightarrow \left(3x^3y^2-6y^3x^2\right)+\left(x^2y^3-4y^2x^3\right)+z=-9x^2y^3 \rightarrow z=x^3y^2-4x^2y^3$
19. $A=\frac{bh}{2} \rightarrow h=\frac{2A}{b}=\frac{2\left(x^2-y^2\right)}{x+y}=2(x-y)$
20. $\frac{1}{4}\sqrt[5]{3x^2+4y^3+26}=\frac{1}{4}\sqrt[5]{32}=\frac{1}{2}$
21. $nt\left(\frac{pv}{nt}\right)=ntr \rightarrow pv=ntr \rightarrow \frac{pv}{tr}=\frac{ntr}{tr} \rightarrow \frac{pv}{tr}=n$
22. (1,0) is the only point that does not satisfy the equation. $-(1)^2+2(1)-3=-1+2-3=-2\neq 0$
23. Dividing both sides of the equation by c^2 and simplifying yields $\frac{a}{c^2}$
24. $\sqrt{16}=4$ which is not irrational
25. $4\left(x^2-25\right)=60 \rightarrow x^2-25=15 \rightarrow \frac{2}{3}\left(x^2-25\right)=\frac{2}{3}\cdot 15=10$