

NAME: \_\_\_\_\_

*P.I. A.A.26: Solve algebraic proportions in one variable which result in linear or quadratic equations*

Solve:

1.  $\frac{x-4}{x-2} = \frac{x-9}{x+1}$

[A]  $\frac{11}{4}$  [B]  $\frac{7}{3}$  [C]  $-\frac{9}{2}$  [D]  $\frac{7}{4}$

2.  $\frac{x+7}{x-6} = \frac{x+3}{x+5}$

[A]  $\frac{17}{5}$  [B]  $\frac{17}{15}$  [C]  $-\frac{53}{15}$  [D]  $-\frac{18}{35}$

3.  $\frac{x+8}{x-9} = \frac{x-7}{x-5}$

[A]  $-\frac{63}{40}$  [B]  $\frac{23}{19}$  [C]  $\frac{23}{29}$  [D]  $\frac{103}{19}$

4.  $\frac{x+3}{x+6} = \frac{x+1}{x+2}$

[A]  $-6$  [B]  $1$  [C]  $-2$  [D]  $0$

5.  $\frac{x+8}{x-4} = \frac{x+4}{x-1}$

[A]  $-\frac{8}{3}$  [B]  $-\frac{24}{7}$  [C]  $-\frac{8}{7}$  [D]  $2$

6.  $\frac{x-2}{x-3} = \frac{x+6}{x-7}$

[A]  $\frac{8}{3}$  [B]  $-2$  [C]  $-\frac{9}{7}$  [D]  $\frac{1}{3}$

7.  $\frac{x+8}{x-9} = \frac{x-5}{x-4}$

[A]  $\frac{77}{18}$  [B]  $-\frac{45}{32}$  [C]  $\frac{1}{2}$  [D]  $\frac{13}{18}$

8.  $\frac{x+7}{x-8} = \frac{x+2}{x-6}$

[A]  $-\frac{58}{19}$  [B]  $\frac{8}{21}$  [C]  $\frac{26}{7}$  [D]  $-\frac{58}{7}$

9.  $\frac{x+3}{x+5} = \frac{x+1}{x+9}$

[A]  $\frac{16}{3}$  [B]  $\frac{5}{27}$  [C]  $-\frac{8}{3}$  [D]  $-\frac{11}{3}$

10.  $\frac{x+9}{x-4} = \frac{x+1}{x+6}$

[A]  $\frac{25}{9}$  [B]  $-\frac{2}{27}$  [C]  $-\frac{29}{9}$  [D]  $\frac{25}{3}$

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11. Compare the quantities in Column A and Column B.

|   |   |
|---|---|
| <u>Column A</u><br>the greatest solution of the<br>equation $\frac{4}{t-5} = \frac{t}{6}$ | <u>Column B</u><br>the greatest solution of the<br>equation $\frac{x}{x-6} = \frac{x}{7}$ |
|---|---|

- [A] The quantity in Column A is greater.                      [B] The quantity in Column B is greater.  
[C] The quantities are equal.  
[D] The relationship cannot be determined from the information given.

12. What is the solution of  $\frac{1}{x-3} = \frac{1}{3x}$ ?                      [A]  $\frac{2}{3}$     [B]  $-3$     [C]  $-\frac{2}{3}$     [D]  $1.5$     [E]  $-1.5$

13. The sum of a set of data is modeled by  $x^2 + 3x - 2$ . For what positive value of  $x$  is the average of  $x$  pieces of data equal to 4?

14. The rate at which a cut-off cone tapers is the taper per foot,  $T$ . It is calculated using the formula  $T = \frac{24(R-r)}{L}$ , where  $R$  is the radius of the larger base of the cone,  $r$  is the radius of the smaller base of the cone and  $L$  is the length of the cone.  $R$ ,  $r$ , and  $L$  are measured in inches. Find  $L$  if  $R = 6$  in.,  $r = 2$  in., and  $T = 0.6$ .

15. Use a graphing calculator to graph the function  $y = \frac{-5}{(x-2)}$ . Then find the value of  $x$  for which  $y = -2.5$ .

16. Write two functions that you can graph to find the solution(s) to the equation  $\frac{2}{x+1} = \frac{3}{x}$ . Graph the functions to check your answer.

[1] A

[2] C

[3] D

[4] D

[5] C

[6] A

[7] A

[8] C

[9] D

[10] C

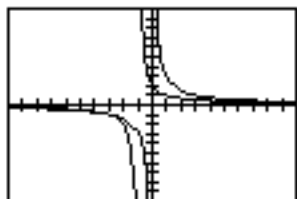
[11] B

[12] E

[13]  $x = 2$

[14] 160 in.

[15]  $x = 4$



[16]  $y = \frac{2}{x+1}; y = \frac{3}{x}$