

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

Solve:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Column A

the greatest solution of the

equation $\frac{4}{t-5} = \frac{t}{6}$

Column B

the greatest solution of the

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

$$T = \frac{24(R-r)}{L}, \text{ where } R \text{ is the radius of the larger base of the cone, } r \text{ is the radius of the smaller base of}$$

the cone and L is the length of the cone. R , r , and L are measured in inches. Find L if

$$R = 6 \text{ in.}, r = 2 \text{ in.}, \text{ and } T = 0.6.$$

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

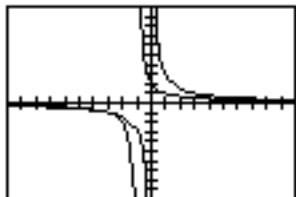
[11] B

[12] E

[13] $x = 2$

[14] 160 in.

[15] $x = 4$



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