

Algebra 3 Review Worksheet

A. Solve the following:

1. $\frac{x+2}{3x+2} = \frac{3x-1}{x+8}$

2. $\frac{24}{x^2-16} = \frac{3}{x-4} + \frac{5}{x+4}$

3. $\frac{3}{2}\left(\frac{2}{3}x - \frac{3}{4}\right) - \frac{5}{6}\left(\frac{1}{2}x + \frac{3}{5}\right) = \frac{1}{3}\left(2x - \frac{3}{4}\right) - 2$

4. $\frac{5x+3}{x-2} + \frac{2x-1}{x+3} - \frac{16x+33}{x^2+x-6} = 1 - \frac{2x}{x+3}$

5. The denominator of a fraction is 3 more than the numerator. If the numerator and denominator are both decreased by 1, the resulting fraction is $\frac{3}{20}$ less than the original fraction. Find the original fraction.

6. Josh can split a cord of wood in 4 days. His father can split a cord in 2 days. How long will it take them to split a cord of wood if they work together?

7. Mary can side a house in 12 days. After she has worked for 4 days she is joined by Chris, and it takes them 2 days working together to complete the job. How long would it take Chris to do the whole job himself?

8. Find two numbers such that their sum, their difference and their product have the ratio 3:2:5.

C. Find all roots of each of the following:

1. $x^5 - 9x^4 + 31x^3 - 49x^2 + 36x - 10 = 0$

2. $8x^5 - 14x^4 - 37x^3 + 58x^2 + 20x - 8 = 0$

3. $36x^4 - 72x^3 + 53x^2 - 17x + 2 = 0$

D. Write an integral polynomial having the following sets of roots

1. $\{2 \pm 3i, -1 \pm 2i\}$

2. $\left\{1, -\frac{2}{3}, \frac{3}{5}\right\}$

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Answers:

A.

1. $2, -\frac{9}{8}$

2. no solution

3. $\frac{15}{2}$

4. -1

5. $\frac{2}{5}$

6. $1\frac{1}{3}$ days

7. 4 days

8. 10, 2

C. Find all roots of each of the following:

1. $1, 1, 1, 3 \pm i$

2. $2, 2, -2, -\frac{1}{2}, \frac{1}{4}$

3. $\frac{1}{2}, \frac{1}{2}, \frac{1}{3}, \frac{2}{3}$

D. Write an integral polynomial having the following sets of roots

1. $x^4 - 2x^3 + 10x^2 + 6x + 65 = 0$

2. $15x^3 - 14x^2 - 7x + 6 = 0$