Solving Complex Equations

September-17-18
9:56 AM

PRE-CALCULUS 11
MATHEMATICS 10 REVIEW
SOLVING COMPLEX EQUATIONS

How to Solve Complex Equations

1. Get rid of all brackets first using Distributive Property.
2. Get rid of all fractions by multiplying the entire equation by the common denominator.
3. Combine any like terms on each side of the equation.
4. Use basic equation solving rules to solve for the variable.
5. Check to make sure your answer is correct.

Solve the following equations. Make sure to include a check.

1) $\frac{x}{2}+\frac{1}{3}=\frac{5}{6}$

$6\left[\frac{1}{2}x+\frac{1}{3}=\frac{5}{6}\right]$

$3x+2=5$

$-2 \quad -2$

$\frac{3}{3}x=\frac{3}{3}$

$\boxed{x=1}$

Check.

$\frac{x}{2}+\frac{1}{3}=\frac{5}{6}$

$\frac{(1)}{2}+\frac{1}{3}=\frac{5}{6}$

$\frac{5}{6}=\frac{5}{6}$ ✓

2) $2+\frac{m+4}{3}=\frac{m-1}{4}$

$2+\frac{m}{3}+\frac{4}{3}=\frac{m}{4}-\frac{1}{4}$

$12\left[2+\frac{1}{3}m+\frac{4}{3}=\frac{1}{4}m-\frac{1}{4}\right]$

$24+4m+16=3m-3$

$4m+40=3m-3$

$-3m \quad -3m$

$m+40=-3$

$-40 \quad -40$

$\boxed{m=-43}$

check.

$2+\frac{m+4}{3}=\frac{m-1}{4}$

$2+\frac{(-43)+4}{3}=\frac{(-43)-1}{4}$

$2+\frac{-39}{3}=\frac{-44}{4}$

$2-13$

$-11=-11$ ✓

3) $\frac{1}{2}(x-2)=\frac{1}{3}(x+5)$

$6\left[\frac{1}{2}x-1=\frac{1}{3}x+\frac{5}{3}\right]$

$3x-6=2x+10$

$-2x \quad -2x$

$x-6=10$

$+6 \quad +6$

$\boxed{x=16}$

check.

$\frac{1}{2}(x-2)=\frac{1}{3}(x+5)$

$\frac{1}{2}((16)-2)=\frac{1}{3}((16)+5)$

$\frac{1}{2}(14)=\frac{1}{3}(21)$

$7=7$ ✓

4) $4-\frac{1}{2}(4x-3)=\frac{1}{4}(2x+1)-3$

$4\left[4-2x+\frac{3}{2}=\frac{1}{2}x+\frac{1}{4}-3\right]$

$16-8x+6=2x+1-12$

$-8x+22=2x-11$

$-2x \quad -2x$

$-10x+22=-11$

$-22 \quad -22$

$\frac{-10x}{-10}=\frac{-33}{-10}$

$\boxed{x=\frac{33}{10}\ \text{or}\ 3\frac{3}{10}}$

check.

$4-\frac{1}{2}(4x-3)=\frac{1}{4}(2x+1)-3$

$4-\frac{1}{2}\left(4\left(\frac{33}{10}\right)-3\right)=\frac{1}{4}\left(2\left(\frac{33}{10}\right)+1\right)-3$

$-1\frac{1}{10}=-1\frac{1}{10}$ ✓

Assignment: Solving Complex Equations Assignment #1 - 16

PRE-CALCULUS 11
MATHEMATICS 10 REVIEW
SOLVING COMPLEX EQUATIONS ASSIGNMENT

Solve the following on a separate piece of paper. Make sure to include a check.

1) $\frac{x}{3}-\frac{2}{5}=\frac{7}{5}$

2) $\frac{y}{2}-\frac{y}{3}=\frac{4}{6}$

3) $\frac{5k}{4}-\frac{2}{3}=\frac{k}{6}$

4) $\frac{b+3}{2}=\frac{4-b}{5}+3$

5) $\frac{2x}{3}+\frac{3}{2}=-\frac{3}{4}x+\frac{5}{3}$

6) $\frac{4x}{3}-\frac{5x}{7}+\frac{11x}{21}=-2$

7) $\frac{1}{4}(x-2)=\frac{1}{5}(2x+3)$

8) $-\frac{4}{5}+\frac{3}{10}(7-x)=\frac{7x}{20}$

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

10) $\frac{7}{2}(6x-3)=-\frac{5}{4}x+\frac{9}{2}(2-5x)$

11) $\frac{1}{2}(5m-1)-\frac{3}{4}(m+3)=-1$

12) $\frac{3}{5}(2a-1)=1+\frac{2}{11}(5a-4)$

13) $-\frac{1}{4}(3x-2)+\frac{1}{2}(1+x)=-\frac{1}{8}$

14) $6+\frac{2}{5}(1-3x)=\frac{1}{10}(2x+1)$

15) $\frac{2}{3}-\frac{5}{9}(4-3x)=-\frac{1}{6}(x+3)$

16) $-\frac{3}{2}(-x+5)-\frac{4}{3}=\frac{5}{6}(5-2x)$

ANSWERS

1) $\frac{27}{5}$	2) 4	3) $\frac{8}{13}$	4) $\frac{23}{7}$
5) $\frac{2}{17}$	6) $-\frac{7}{4}$	7) $-\frac{22}{3}$	8) 2
9) $\frac{107}{99}$	10) $\frac{78}{179}$	11) 1	12) 3
13) $\frac{9}{2}$	14) $\frac{9}{2}$	15) $\frac{19}{33}$	16) $\frac{78}{19}$