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Integrated Review Day 2: Solving Linear and Quadratic Equations

Solve the following equations. Please show all work.

1. $3(2x+5)=39$

$6x+15=39$

$6x=24$

$x=4$

2. $6(3x-5)-7x=25$

$18x-30-7x=25$

$11x-30=25$

$11x=55$

$x=5$

3. $7w-3(4w+8)=11$

$7w-12w-24=11$

$-5w-24=11$

$-5w=35$

$w=-7$

4. $-3(3x+15)-(10+x)=35$

$-9x-45-10-x=35$

$-10x-55=35$

$-10x=90$

$x=-9$

5. $\frac{2}{5}n+6=10$

$\frac{2}{5}n=4$

$n=4\left(\frac{5}{2}\right)$

$n=10$

6. $-18=\frac{5}{2}r+12$

$-30=\frac{5}{2}r$

$\frac{2}{5}(-30)=r$

$-12=r$

7. $-15v-40=23-8v$

$-40=23+7v$

$-63=7v$

$-9=v$

8. $12r-18=13r+18$

$-18=r+18$

$-36=r$

9. $2(6d+3)=18-3(16-3d)$

$12d+6=18-48+9d$

$12d+6=-30+9d$

$3d+6=-30$

$3d=-36$

$d=-12$

10. $-5-(15y-1)=2(7y-16)-y$

$-5-15y+1=14y-32-y$

$-15y-4=13y-32$

$-28y-4=-32$

$-28y=-28$

$y=1$

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11. $\sqrt{x^2} = \sqrt{81}$

$x = \pm 9$

12. $x^2 - 16 = 8$

$\sqrt{x^2} = \sqrt{24}$

$x = \pm\sqrt{24} = \pm 2\sqrt{6}$

13. $2x^2 - 3 = 15$

$2x^2 = 18$

$x^2 = 9$

$x = \pm 3$

14. $\sqrt{(a+3)^2} = \sqrt{25}$

$a + 3 = \pm 5$

$a = -3 \pm 5$

$a = 2$ or -8

15. $3(x-5)^2 = 12$

$(x-5)^2 = 4$

$x - 5 = \pm 2$

$x = 5 \pm 2 \Rightarrow x = 7$ or 3

16. $\sqrt{(4t+1)^2} = \sqrt{49}$

$4t + 1 = \pm 7$

$4t + 1 = 7$ $\quad$ $4t + 1 = -7$

$4t = 6$ $\quad$ $4t = -8$

$t = \frac{3}{2}$ or $t = -2$

17. $x^2 - 10x + 25 = 9$

$x^2 - 10x + 16 = 0$

$(x-8)(x-2) = 0$

$x = 8$ or 2

18. $x^2 - 6x + 9 = 49$

$x^2 - 6x - 40 = 0$

$(x-10)(x+4) = 0$

$x = 10$ or -4

19. $x^2 + 12x + 36 = 75$

$(x+6)^2 = 75$

$x + 6 = \pm\sqrt{75}$

$x + 6 = \pm 5\sqrt{3}$

$x = 6 \pm 5\sqrt{3}$

20. $-x^2 + 2x - 8 = 0$

$x^2 - 2x + 8 = 0$

$x = \frac{2 \pm \sqrt{(2)^2 - 4(1)(8)}}{2(1)}$

$x = \frac{2 \pm \sqrt{4 - 32}}{2}$

$x = \frac{2 \pm \sqrt{-28}}{2}$

$x = \frac{2 \pm 2i\sqrt{7}}{2}$

$x = 1 \pm i\sqrt{7}$