

Prerequisite Skills for Solving Trig Equations

Name _____

Be able to solve multi-step linear equations:

1. $7x + 5 = 12x - 10$

$5 = 5x - 10$

$15 = 5x$

$x = 3$

2. $26 = 24 - x$

$2 = -x$

$-2 = x$

3. $\frac{2}{3}(6x - 7) = 10$

$6x - 7 = 15$

$6x = 22$

$x = \frac{22}{6} = \frac{11}{3}$

4. $19 - 3x = 14 + 2x$

$19 = 14 + 5x$

$5 = 5x$

$1 = x$

5. $2(7 - 5y) - 3y = -35$

$14 - 10y - 3y = -35$

$14 - 13y = -35$

$-13y = -49$

$y = \frac{49}{13}$

6. $14 + 4(x - 5) = 6 - 2x$

$14 + 4x - 20 = 6 - 2x$

$4x - 6 = 6 - 2x$

$6x - 6 = 6$

$6x = 12$

$x = 2$

Be able to solve quadratic equations by factoring.

9. $x^2 - 36 = 0$

$(x + 6)(x - 6) = 0$

$x = -6, x = 6$

10. $18x^2 - 8 = 0$

$2(9x^2 - 4) = 0$

$2(3x - 2)(3x + 2) = 0$

$3x - 2 = 0$ $3x + 2 = 0$

$3x = 2$

$x = \frac{2}{3}$

$3x = -2$

$x = -\frac{2}{3}$

12. $16x^2 - 49 = 0$

$(4x - 7)(4x + 7) = 0$

$4x = 7$

$x = \frac{7}{4}$

$4x = -7$

$x = -\frac{7}{4}$

11. $100x^3 - 25x = 0$

$25x(4x^2 - 1) = 0$

$25x(2x + 1)(2x - 1) = 0$

$25x = 0$ $2x + 1 = 0$ $2x - 1 = 0$

$x = 0$

$2x = -1$

$2x = 1$

$x = -\frac{1}{2}$

$x = \frac{1}{2}$

13. $16x - 9x^3 = 0$

$x(16 - 9x^2) = 0$

$x(4 - 3x)(4 + 3x) = 0$

$x = 0$

$4 - 3x = 0$

$4 + 3x = 0$

$4 = 3x$

$3x = -4$

$\frac{4}{3} = x$

$x = -\frac{4}{3}$

15. $x^2 - 8x + 12 = 0$

$\begin{array}{r} 12 \\ -6 \quad -2 \\ -8 \end{array}$

$(x - 6)(x - 2) = 0$

$x = 6, x = 2$

14. $x^2 + 4x + 3 = 0$

$\begin{array}{r} 3 \\ 3 \quad 1 \\ 4 \end{array}$

$(x + 3)(x + 1) = 0$

$x = -3, x = -1$

16. $x^2 - 4x - 21 = 0$

$\begin{array}{r} -21 \\ -7 \quad +3 \\ -4 \end{array}$

$(x - 7)(x + 3) = 0$

$x = 7, x = -3$

17. $x^2 = 12(x-3)$

$x^2 = 12x - 36$

$x^2 - 12x + 36 = 0$

$(x-6)(x-6) = 0$

$x = 6$ (mult 2)

~~$\begin{matrix} 36 & & \\ -6 & \times & -6 \\ -12 & & \end{matrix}$~~

18. $x^2 - 5x = 0$

$x(x-5) = 0$

$x = 0$

$x - 5 = 0$

$x = 5$

19. $x^2 + 6x = 27$

$x^2 + 6x - 27 = 0$

$(x+9)(x-3) = 0$

$x = -9, x = 3$

~~$\begin{matrix} -27 & & \\ 9 & \times & -3 \\ 6 & & \end{matrix}$~~

20. $x(x-1) = 12$

$x^2 - x = 12$

$x^2 - x - 12 = 0$

$(x-4)(x+3) = 0$

$x = 4, x = -3$

~~$\begin{matrix} -12 & & \\ -4 & \times & 3 \\ -1 & & \end{matrix}$~~

21. $5x^2 + 13x = 6$

$5x^2 + 13x - 6 = 0$

$(x+15)(x-2)$

$(x+3)(x-\frac{2}{5}) = 0$

$x = -3, x = \frac{2}{5}$

~~$\begin{matrix} -30 & & \\ 15 & \times & -2 \\ 13 & & \end{matrix}$~~

22. $3x^2 + 13x - 10 = 0$

~~$\begin{matrix} -30 & & \\ 15 & \times & -2 \\ 13 & & \end{matrix}$~~

$(x+15)(x-2) = 0$

$(x+5)(x-\frac{2}{3}) = 0$

$x = -5, x = \frac{2}{3}$

23. $10x^2 = x$

$10x^2 - x = 0$

$x(10x - 1) = 0$

$x = 0$

$10x - 1 = 0$

$10x = 1$

$x = \frac{1}{10}$

25. $5x^2 - 17x + 4 = x^2$

$4x^2 - 17x + 4 = 0$

$(x-16)(x-1) = 0$

$(x-4)(x-\frac{1}{4}) = 0$

$x = 4, x = \frac{1}{4}$

~~$\begin{matrix} 16 & & \\ -16 & \times & -1 \\ -17 & & \end{matrix}$~~

24. $12x^2 + 25x = -12$

$12x^2 + 25x + 12 = 0$

$(x+9)(x+16) = 0$

$(x+\frac{3}{4})(x+\frac{4}{3}) = 0$

$x = -\frac{3}{4}, x = -\frac{4}{3}$

~~$\begin{matrix} 144 & & \\ 9 & \times & 16 \\ 25 & & \end{matrix}$~~

26. $6x^2 + 7x - 3 = 0$

~~$\begin{matrix} -18 & & \\ 9 & \times & -2 \\ 7 & & \end{matrix}$~~

$(x+9)(x-2) = 0$

$(x+\frac{3}{2})(x-\frac{1}{3}) = 0$

$x = -\frac{3}{2}, x = \frac{1}{3}$

27. $2x^2 + 11x - 21 = 0$

~~$\begin{matrix} -42 & & \\ 14 & \times & -3 \\ 11 & & \end{matrix}$~~

$(x+14)(x-3) = 0$

$(x+7)(x-\frac{3}{2}) = 0$

$x = -7, x = \frac{3}{2}$

28. $x(x+1) = 4x$

$x^2 + x = 4x$

$x^2 - 3x = 0$

$x(x-3) = 0$

$x = 0$

$x - 3 = 0$

$x = 3$

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5. $2(7 - 5y) - 3y = -35$

6. $14 + 4(x - 5) = 6 - 2x$

Be able to solve quadratic equations by factoring.

7. $x^2 - 36 = 0$

10. $18x^2 - 8 = 0$

11. $100x^3 - 25x = 0$

12. $16x^2 - 49 = 0$

13. $16x - 81x^3 = 0$

14. $x^2 + 4x + 3 = 0$

15. $x^2 - 8x + 12 = 0$

16. $x^2 - 4x - 21 = 0$

