

Solve the equation by factoring.

1.  $6x^2 + x - 12 = 0$

$(3x - 4)(2x + 3) = 0$

$x = \frac{4}{3}$     $x = -\frac{3}{2}$

4.  $75x^2 + 35x - 10 = 0$

$5(15x^2 + 7x - 2) = 0$

$5(5x - 1)(3x + 2) = 0$

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

7.  $\left(\frac{2x}{x+3} + \frac{5}{x} - 4 = \frac{18}{x^2+3x}\right) \cdot x(x+3)$

$2x^2 + 5(x+3) - 4x(x+3) = 18$

$2x^2 + 5x + 15 - 4x^2 - 12x = 18$

$-2x^2 - 7x - 3 = 0$

$2x^2 + 7x + 3 = 0$

$(2x + 1)(x + 3) = 0$

$x = -\frac{1}{2}$     ~~$x = -3$~~

Determine whether the two equations are equivalent.

15. (a)  $x^2 = 16, x = 4$

$\sqrt{x^2} = \sqrt{16}$

$x = \pm 4$

NO

3.  $2x(4x + 15) = 27$

$8x^2 + 30x - 27 = 0$

$(4x - 3)(2x + 9) = 0$

$x = \frac{3}{4}$     $x = -\frac{9}{2}$

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

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

$(5x + 6)(3x - 2) = 0$

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

5.  $12x^2 + 60x + 75 = 0$

$3(4x^2 + 20x + 25) = 0$

$3(2x + 5)(2x + 5) = 0$

$x = -\frac{5}{2}$  d.r.

8.  $\left(\frac{5x}{x-3} + \frac{4}{x+3} = \frac{90}{x^2-9}\right) \cdot x-3 \cdot x+3$

$5x(x+3) + 4(x-3) = 90$

$5x^2 + 15x + 4x - 12 = 90$

$5x^2 + 19x - 102 = 0$

$(5x + 34)(x - 3) = 0$

$x = -\frac{34}{5}$     ~~$x = 3$~~

6.  $4x^2 - 72x + 324 = 0$

$4(x^2 - 18x + 81) = 0$

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

$x = 9$  d.r.

9.  $\left(\frac{3x}{x-2} + \frac{1}{x+2} = \frac{-4}{x^2-4}\right) \cdot x-2 \cdot x+2$

$3x(x+2) + (x-2) = -4$

$3x^2 + 6x + x - 2 = -4$

$3x^2 + 7x + 2 = 0$

$(3x + 1)(x + 2) = 0$

$x = -\frac{1}{3}$     ~~$x = -2$~~

Solve.

16.  $\sqrt{x^2} = \sqrt{169}$

$x = \pm 13$

17.  $\frac{25x^2}{25} = \frac{9}{25}$

$\sqrt{x^2} = \sqrt{\frac{9}{25}}$

$x = \pm \frac{3}{5}$

18.  $\sqrt{(x-3)^2} = \sqrt{17}$

$x - 3 = \pm \sqrt{17}$

$x = 3 \pm \sqrt{17}$

19.  $\frac{4(x+2)^2}{4} = \frac{11}{4}$

$\sqrt{(x+2)^2} = \sqrt{\frac{11}{4}}$

$x + 2 = \pm \sqrt{\frac{11}{4}}$

$x = -2 \pm \frac{\sqrt{11}}{2}$