

I. Solve the following equations:

a) $x - 4 = 0$

b) $2x - 3 = 0$

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

Solve each equation by factoring.

1) $(k + 1)(k - 5) = 0$

2) $(a + 1)(a + 2) = 0$

3) $(4k + 5)(k + 1) = 0$

4) $(2m + 3)(4m + 3) = 0$

5) $x^2 - 11x + 19 = -5$

6) $n^2 + 7n + 15 = 5$

7) $n^2 - 10n + 22 = -2$

8) $n^2 + 3n - 12 = 6$

$$9) 6n^2 - 18n - 18 = 6$$

$$10) 7r^3 - 14r = -7$$

$$11. 4x^2 = 7x$$

$$12. 4x^2 = 25$$

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

$$14. 5x^2 - 20 = 0$$

$$15) 7x^2 + 2x = 0$$

$$16) 3x^2 - 16x - 7 = 5$$

Key

I. Solve the following equations:

a) $x - 4 = 0$

$$x = 4$$

b) $2x - 3 = 0$

$$\begin{array}{l} +3 \quad +3 \\ \hline 2x = 3 \\ \hline \frac{2x}{2} = \frac{3}{2} \end{array}$$

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

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

$$4x - 3 = 0$$

$$4x = 3$$

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

Solve each equation by factoring.

1) $(k+1)(k-5) = 0$

$$k+1=0 \quad | \quad k-5=0$$

$$k = -1 \quad | \quad k = 5$$

2) $(a+1)(a+2) = 0$

$$a+1=0 \quad | \quad a+2=0$$

$$a = -1 \quad | \quad a = -2$$

3) $(4k+5)(k+1) = 0$

$$4k+5=0 \quad | \quad k+1=0$$

$$4k = -5$$

$$k = -\frac{5}{4}$$

$$k = -1$$

4) $(2m+3)(4m+3) = 0$

$$2m+3=0 \quad | \quad 4m+3=0$$

$$2m = -3$$

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

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

5) $x^2 - 11x + 19 = -5$ $ax^2 + bx + c = 0$

$$x^2 - 11x + 24 = 0 \quad \begin{array}{l} -8 \quad -3 \\ \hline -8 \quad -3 \\ \hline \end{array} = 24$$

$$-8 + -3 = -11$$

$$x^2 - 8x - 3x + 24 = 0$$

$$x(x-8) - 3(x-8) = 0$$

$$(x-8)(x-3) = 0$$

$$x-8=0 \quad | \quad x-3=0$$

$$x = 8 \quad | \quad x = 3$$

7) $n^2 - 10n + 22 = -2$

$$n^2 - 10n + 24 = 0 \quad \begin{array}{l} -6 \quad -4 \\ \hline -6 \quad -4 \\ \hline \end{array} = 24$$

$$-6 + -4 = -10$$

$$n^2 - 6n - 4n + 24 = 0$$

$$n(n-6) - 4(n-6) = 0$$

$$(n-6)(n-4) = 0$$

$$n-6=0 \quad | \quad n-4=0$$

$$n = 6 \quad | \quad n = 4$$

6) $n^2 + 7n + 15 = 5$

$$n^2 + 7n + 10 = 0$$

$$\begin{array}{l} 5 \quad 2 \\ \hline 5 \quad 2 \\ \hline \end{array} = 10$$

$$5 + 2 = 7$$

$$n^2 + 5n + 2n + 10 = 0$$

$$n(n+5) + 2(n+5) = 0$$

$$(n+5)(n+2) = 0 \quad \leftarrow \text{factored form}$$

$$n+5=0 \quad | \quad n+2=0$$

$$n = -5 \quad | \quad n = -2 \quad \leftarrow \text{solutions.}$$

8) $n^2 + 3n - 12 = 6$

$$n^2 + 3n - 18 = 0$$

$$\begin{array}{l} 6 \quad -3 \\ \hline 6 \quad -3 \\ \hline \end{array} = -18$$

$$6 + -3 = 3$$

$$n^2 + 6n - 3n - 18 = 0$$

$$n(n+6) - 3(n+6) = 0$$

$$(n+6)(n-3) = 0$$

$$n+6=0 \quad | \quad n-3=0$$

$$n = -6 \quad | \quad n = 3$$

$$9) 6n^2 - 18n - 18 = 6$$

$$\frac{6n^2}{6} - \frac{18n}{6} - \frac{24}{6} = 0$$

$$6(n^2 - 3n - 4) = 0$$

$$6(n-4)(n+1) = 0$$

$$\boxed{n=4, n=-1}$$

$$10) 7r^3 - 14r = -7$$

$$\frac{7r^3}{7} - \frac{14r}{7} + \frac{7}{7} = 0$$

$$7(r^2 - 2r + 1) = 0$$

$$7(r-1)(r-1) = 0$$

$$\boxed{r=1}$$

$$11. 4x^2 = 7x$$

$$4x^2 - 7x = 0$$

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

$$\boxed{x=0, x=7/4}$$

$$12. 4x^2 = 25$$

$$4x^2 - 25 = 0$$

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

$$\boxed{x=-5/2, x=5/2}$$

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

$$3x^2 = 10$$

$$x^2 = \frac{10}{3}$$

$$\boxed{x = \pm \sqrt{\frac{10}{3}}}$$

$$14. 5x^2 - 20 = 0$$

$$5(x^2 - 4) = 0$$

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

$$\boxed{x=-2, 2}$$

9, 4
12, 3
18, 2

$$19) 7x^2 + 2x = 0$$

$$x(7x+2) = 0$$

$$\boxed{x=0, x=-2/7}$$

$$20) 3x^2 - 16x - 7 = 5 \quad -18 \times 2 = -36$$

$$-18 + 2 = -16$$

$$3x^2 - 16x - 12 = 0$$

$$\overbrace{3x^2 - 18x} + \overbrace{2x - 12} = 0$$

$$3x(x-6) + 2(x-6)$$

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

$$x-6=0 \quad | \quad 3x+2=0$$

$$\boxed{x=6 \quad | \quad x=-2/3}$$