

Factor the following:

1.) $2x^2 - 5x - 3$

$$(2x + 1)(x - 3)$$

$1x$
 $-6x$

4.1
2.2

7.1

3.) $4x^2 - 12x - 7$

$$(2x - 7)(2x + 1)$$

$-14x$
 $2x$

5.) $10ax^2 - 23ax - 5a$

$$a(10x^2 - 23x - 5)$$
$$a(2x - 5)(5x + 1)$$

-25
 $2x$

7.) $x^4 - 9y^2$

$$(x^2 + 3y)(x^2 - 3y)$$

10.1
5.2

2.) $3x^2 + 32x - 11$

$$(3x - 1)(x + 11)$$

$-1x$
 $33x$

4.) $2x^2 + 5x - 42$

$$(2x - 7)(x + 6)$$

$7x$
 $12x$

1.42 6.7

2.21
3.14

6.) $81x^2 - 16y^2$

$$(9x + 4y)(9x - 4y)$$

8.) $x^4 + 6x^2 - 7$

$$(x^2 + 7)(x^2 - 1)$$
$$(x^2 + 7)(x + 1)(x - 1)$$

9.) Solve for x : $2x^2 + x = 3$

$$\begin{array}{r} -3 \quad -3 \\ \hline 2x^2 + x - 3 = 0 \\ (2x + 3)(x - 1) = 0 \end{array}$$

$$\begin{array}{r} 2x + 3 = 0 \\ -3 \quad -3 \\ \hline 2x = -3 \\ \frac{2x}{2} = \frac{-3}{2} \end{array}$$

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

$$x - 1 = 0$$

$$\therefore x = 1$$

10.) Solve for x : $x^4 - 10x^2 + 9 = 0$

$$\begin{array}{l} (x^2 - 9)(x^2 - 1) = 0 \\ (x + 3)(x - 3)(x + 1)(x - 1) = 0 \\ \boxed{x = -3 \mid x = 3 \mid x = -1 \mid x = 1} \end{array}$$

11.) Solve for x : $2x^3 - 9x^2 - 5x = 0$

$$\begin{array}{l} x(2x^2 - 9x - 5) = 0 \\ x(2x + 1)(x - 5) = 0 \end{array}$$

$$x = 0$$

$$2x + 1 = 0$$

$$2x = -1$$

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

$$x - 5 = 0$$

$$x = 5$$

12.) Solve for x : $4x^2 - 32 = 8x$

$$4x^2 - 8x - 32 = 0$$

$$\frac{4}{4}(x^2 - 2x - 8) = \frac{0}{4}$$

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

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

$$x = 4$$

$$x = -2$$