

17.3 DN – Mixed Practice

Solve by taking square roots

$$1. \quad \begin{array}{r} 25x^2 - 5 = -1 \\ +5 \quad +5 \\ \hline 25x^2 = 4 \\ x^2 = \frac{4}{25} \\ x = \pm\sqrt{\frac{4}{25}} \\ x = \left\{ \pm\frac{2}{5} \right\} \end{array}$$

How many solutions does this equation have?

$$2. \quad \begin{array}{r} x^2 - 3x + 4 = 5 \\ -5 \quad -5 \\ \hline x^2 - 3x - 1 = 0 \end{array} \quad \begin{array}{l} a=1 \\ b=-3 \\ c=-1 \end{array}$$

$$b^2 - 4ac = (-3)^2 - 4(1)(-1)$$

$$= 9 + 4$$

$$= 13 \leftarrow \text{positive discriminant}$$

TWO solutions

Solve by factoring

$$3. \quad \begin{array}{r} -6x^2 + 21x + 15 = 3 \\ -3 \quad -3 \\ \hline -6x^2 + 21x + 12 = 0 \\ -3 \quad -3 \\ \hline 2x^2 - 7x - 4 = 0 \end{array}$$

x	-4
$2x^2$	$-8x$
x	-4

$$(2x+1)(x-4) = 0$$

$2x+1=0$ or $x-4=0$
 $2x=-1$ $x=4$
 $x=-\frac{1}{2}$

$x = \left\{ -\frac{1}{2}, 4 \right\}$

Solve using the quadratic formula

$$4. \quad \begin{array}{r} 2x^2 = 3 - 8x \\ -3 - 8x \quad -3 + 8x \\ \hline 2x^2 + 8x - 3 = 0 \end{array} \quad \begin{array}{l} a=2 \\ b=8 \\ c=-3 \end{array}$$

$$x = \frac{-8 \pm \sqrt{8^2 - 4(2)(-3)}}{2(2)}$$

$$x = \frac{-8 \pm \sqrt{64 + 24}}{4}$$

$$x = \frac{-8 \pm \sqrt{88}}{4}$$

$$x = \frac{-8 \pm 2\sqrt{22}}{4} = \frac{2(-4 \pm \sqrt{22})}{2(2)} = \left\{ \frac{-4 \pm \sqrt{22}}{2} \right\}$$

Solve by completing the square

$$5. \quad x^2 - 8x + 4 = -3$$

$$(x^2 - 8x + 16) + 4 - 16 = -3$$

$$(x-4)^2 - 12 = -3$$

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

$$x-4 = \pm 3$$

$$x = 4 \pm 3$$

$x = \{ 7, 1 \}$

Solve using any method

$$6. \quad x^2 - 4x = 4 \quad \text{FACTORING}$$

$$x^2 - 4x - 4 = 0 \quad \text{Prime...}$$

Try quadratic formula $a=1, b=-4, c=-4$

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

$$x = \frac{4 \pm \sqrt{16+16}}{2}$$

$$x = \frac{4 \pm \sqrt{16 \cdot 2}}{2}$$

$$x = \frac{4 \pm 4\sqrt{2}}{2} = \left\{ 2 \pm 2\sqrt{2} \right\}$$