

calculator

P5: Solving Equations Graphically

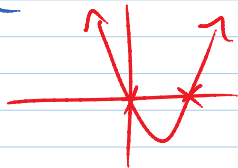
Numerically, Algebraically
check ↙ ↘ Bus hand

Quadratics:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Roots
x-int
zeros

$$ax^2 + bx + c = 0$$



$$y = ax^2 + bx + c$$

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

Part 1 Find solutions using graphs (calculator)

Ex 1 $x^3 - x - 1 = 0$

$x = 1.32$

Ex 2 $4x^2 - 12x + 7 = 0$



$x = .79$ $x = 2.21$

Ex 3

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

$x = -.83$ $x = 4.83$

Ex. 4

$|2x - 1| = 6$

$2x - 1 = 6$ $2x - 1 = -6$

$x = 3.5$ $x = -2.5$

Part II No Calc

Ex 1

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

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

$$x = 3, -1$$

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

$$\frac{2 \pm \sqrt{4 - 4(1)(-3)}}{2(1)}$$

$$\frac{2 \pm \sqrt{16}}{2}$$

$$\frac{2 \pm 4}{2} = \textcircled{3, -1}$$

$$\textcircled{1} x^2 - 5x + 6 = 0$$

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

$$x = 3 \quad x = 2$$

$$\frac{5 \pm \sqrt{25 - 4(1)(6)}}{2(1)}$$

$$\textcircled{2} x^2 - 6x + 6 = -3$$

$$x^2 - 6x + 9 = 0$$

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

$$x = 3$$

$$\textcircled{3} 2x^2 - 4x + 2 = 0$$

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

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

$$x = 1$$

$$\textcircled{4} 3x^2 + 16x - 8 = 0$$

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

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

$$\textcircled{5} x^2 - 4x - 3 = 0$$

$$\frac{4 \pm \sqrt{16 + 12}}{2}$$

$$\sqrt{28}$$

$$\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$$

$$\frac{4 \pm \sqrt{28}}{2}$$

$$\frac{4 \pm 2\sqrt{7}}{2} = \textcircled{2 \pm \sqrt{7}}$$

$$\textcircled{6} 3x^2 - 6x = 5$$

$$3x^2 - 6x - 5 = 0$$

$$\frac{6 \pm \sqrt{96}}{6}$$

$$\sqrt{96}$$

$$\begin{array}{r} 16 \\ \times 6 \\ \hline \end{array}$$

$$\frac{3}{6} \pm \frac{2}{6} \sqrt{6} = \frac{3 \pm 2\sqrt{6}}{3}$$

$$\textcircled{\frac{3 \pm 2\sqrt{6}}{3}}$$