

SOLVING EQUATIONS (CUBIC + OTHER)

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Worked example

Solve:

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

Your turn

Solve:

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

$$x = 0, x = 5, x = -2$$

Worked example

Solve:

$$x^2 = 9$$

$$x^3 = 27$$

$$x^4 = 81$$

$$x^5 = 243$$

Your turn

Solve:

$$x^2 = 4$$

$$x = \pm 2$$

$$x^3 = 8$$

$$x = 2$$

$$x^4 = 16$$

$$x = \pm 2$$

$$x^5 = 32$$

$$x = 2$$

Worked example

Solve:

$$x^3 = 1$$

$$x^3 = 8$$

$$2x^3 = 54$$

Your turn

Solve:

$$5x^3 = 320$$

$$x = 4$$

Worked example

Solve:

$$x^4 = 1$$

$$x^4 = 16$$

$$3x^4 = 768$$

Your turn

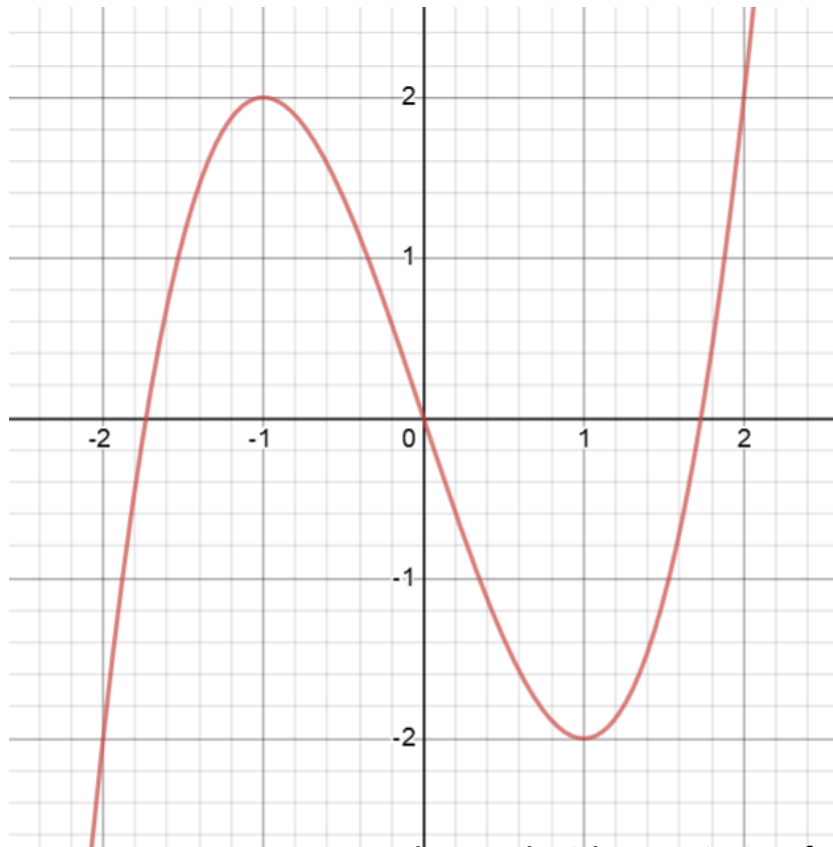
Solve:

$$5x^4 = 405$$

$$x = \pm 3$$

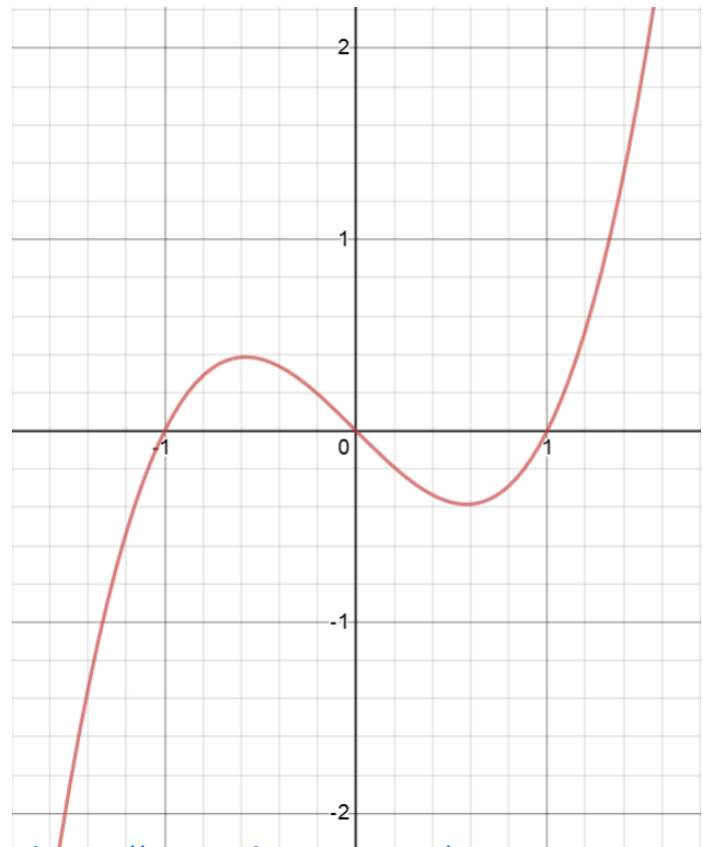
Worked example

The diagram shows the graph of $y = f(x)$ for $-2.5 \leq x \leq 2.5$. For what values of k does the equation $f(x) = k$ have only one solution?



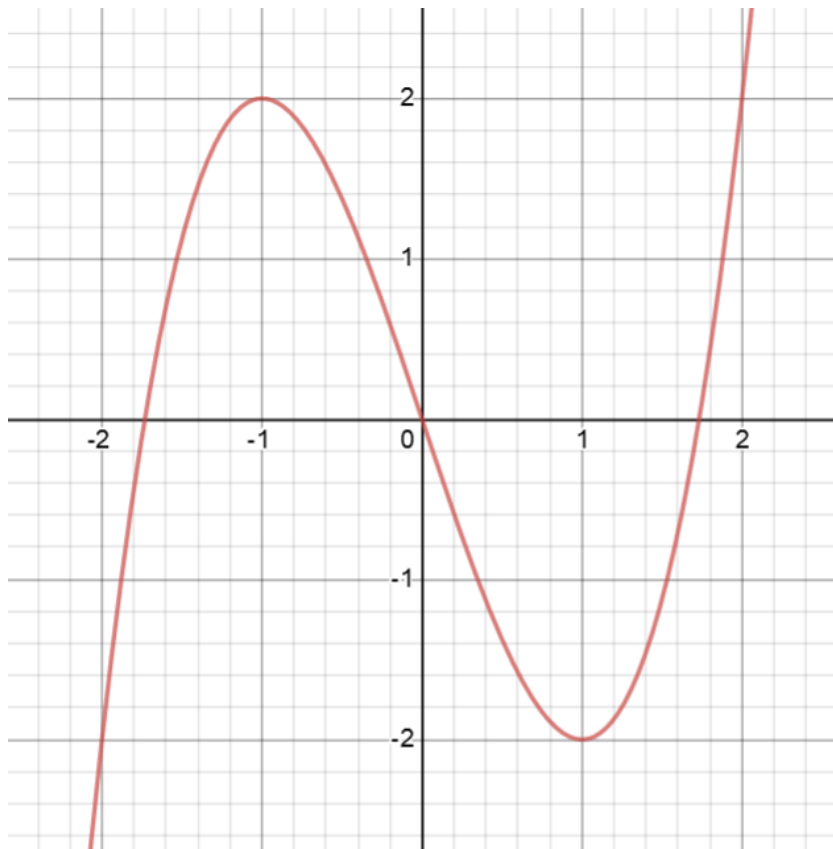
Your turn

The diagram shows the graph of $y = f(x)$ for $-1.8 \leq x \leq 1.8$. For what values of k does the equation $f(x) = k$ have only one solution? $k < -0.4 \cup k > 0.4$



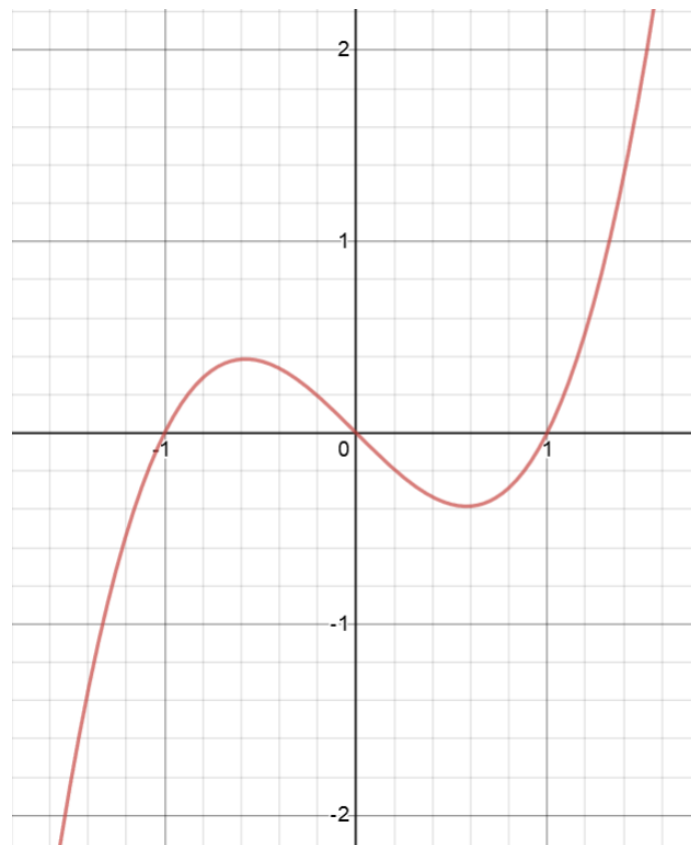
Worked example

The diagram shows the graph of $y = f(x)$ for $-2.5 \leq x \leq 2.5$. For what values of k does the equation $f(x) = k$ have two solutions?



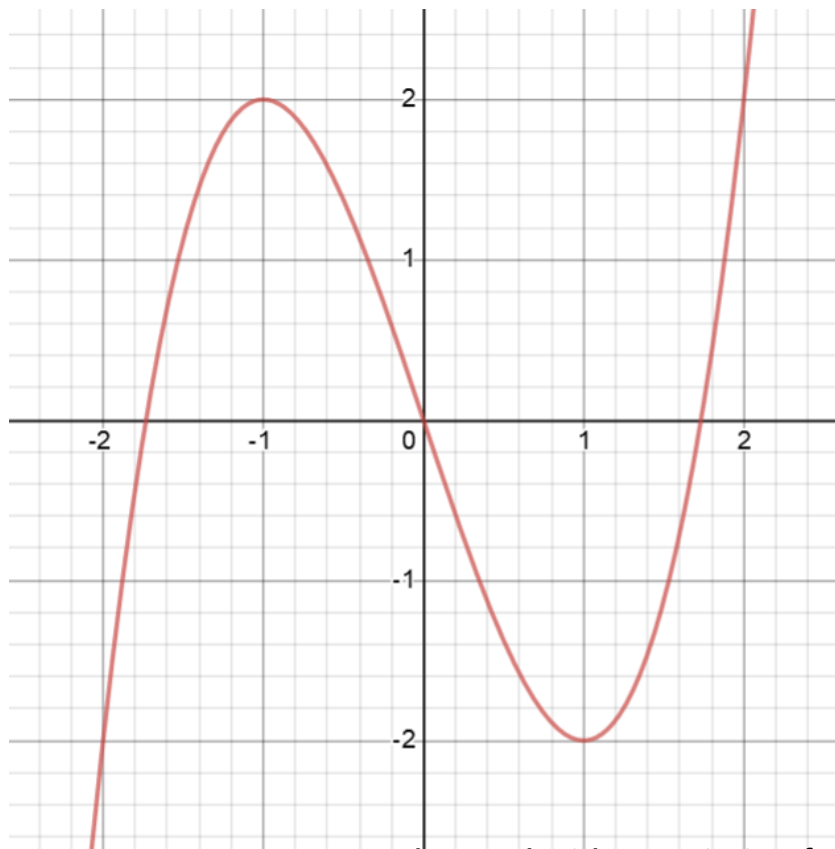
Your turn

The diagram shows the graph of $y = f(x)$ for $-1.8 \leq x \leq 1.8$. For what values of k does the equation $f(x) = k$ have two solutions? $k = -0.4, k = 0.4$



Worked example

The diagram shows the graph of $y = f(x)$ for $-2.5 \leq x \leq 2.5$. For what values of k does the equation $f(x) = k$ have three solutions?



Your turn

The diagram shows the graph of $y = f(x)$ for $-1.8 \leq x \leq 1.8$. For what values of k does the equation $f(x) = k$ have three solutions? $-0.4 < k < 0.4$

