

deg 3: $a=-$ $a=+$ P. 105-106

$$f(x) = ax^4 + 4x^3 + 2x^2 - 4x - 3$$

Brain Dump:

- It's a polynomial
- degree 4
- quartic
- y-int is -3

- Possible Real Roots: 4, 2, 0

- $x=3$ $x=1$ $x=-3$ $x=-1$
Possible roots

Possible factors:
 $(x+3)(x-3)(x+1)(x-1)$

$a=+$

• $a=+$

• $a=-$

• No stretch or compression

Four Corners

Iron
Man
Suit

(4)

Richard
Redford
Brickington
Esq.

Stevie

(1)

Light Saber

Fantastic
Tools

Elder
Wand

(3)

Carl

Dory

(2)

Thurs Hammer

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



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$$f(x) = x^4 + 4x^3 + 2x^2 - 4x - 3$$

Possible Roots Possible factors:

If $f(a) = 0$, then $(x-a)$ is a factor.

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

$$f(1) = (1)^4 + 4(1)^3 + 2(1)^2 - 4(1) - 3$$

$$f(1) = 1 + 4 + 2 - 4 - 3$$

$$f(1) = 0$$

$$x = 1, (x-1)$$

$$f(x) = x^4 + 4x^3 + 2x^2 - 4x - 3$$

	x^3	$5x^2$	$7x$	$+3$	
x	x^4	$5x^3$	$7x^2$	$3x$	R
-1	$-x^3$	$-5x^2$	$-7x$	-3	0

$x^4 + 4x^3 + 2x^2 - 4x - 3$

	x^2	$4x$	$+3$	
x	x^3	$4x^2$	$3x$	R
$+1$	x^2	$4x$	3	0

$x^3 + 5x^2 + 7x + 3$

$$f(x) = (x-1)(x+1)(x^2 + 4x + 3)$$

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

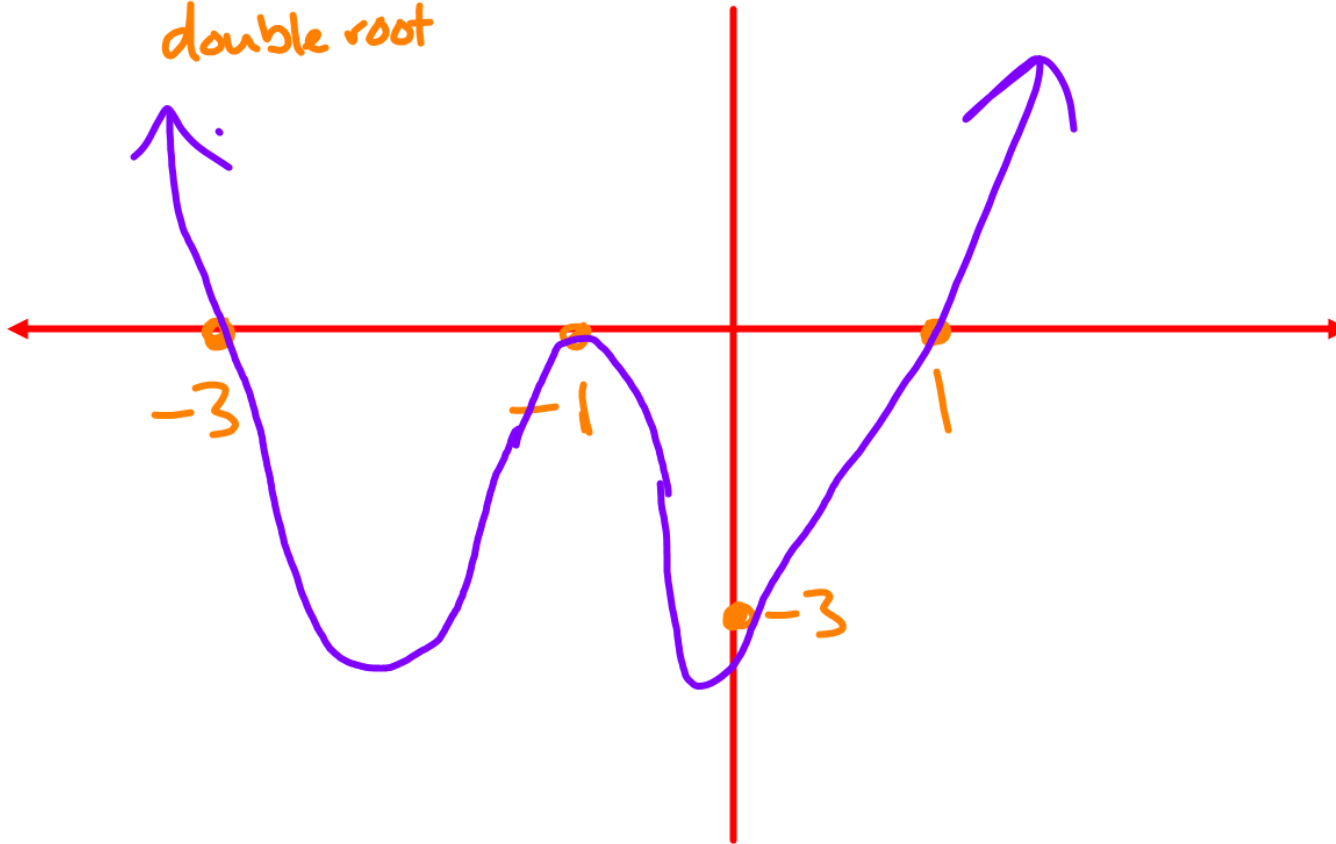
$$f(x) = (x+1)^2(x-1)(x+3)$$

$\begin{array}{c} 3x^2 \\ \text{---} \\ 3x \quad 1x \\ \text{---} \\ 4x \end{array}$

+

$$f(x) = \underbrace{(x+1)^2}_{\text{double root}} (x+3)(x-1)$$

$$y\text{-int.: } (0, -3)$$



$$g(x) = x^3 + 3x^2 + 2x + 6$$

$$g(-3) = (-3)^3 + 3(-3)^2 + 2(-3) + 6$$

$$g(-3) = -27 + 27 - 6 + 6$$

$$g(-3) = 0$$

$$\begin{array}{l} x \\ +3 \end{array} \left| \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right. x^3 + 3x^2 + 2x + 6$$

~~$$x = -6, -1 \quad (x+6)(x+1)$$~~

~~$$x = -3, 2 \quad (x+3)(x+2)$$~~

~~$$x = 3, 2 \quad (x-3)(x-2)$$~~

~~$$x = 6, 1 \quad (x-6)(x-1)$$~~

$$x^3+7x^2+11x+5$$

$$x^3+3x^2+2x+6$$

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