

P. 270

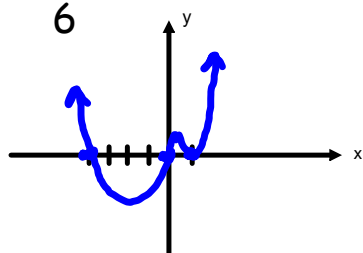
12) a 14) c 16) b 18) d

22) 1, -2 are roots, 3 is not a root

29)

R	M	T/C
0	3	C
1	2	T
-4	1	C

6

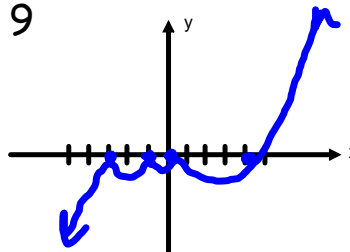


$$2x + x^3 - x^5$$

odd nrg

30)

R	M	T/C
0	2	T
-3	2	T
4	1	C
-1	4	T





Steps:

1. determine end behavior
2. find zeros & multiplicity
(determine if tangent or cross)
3. find a point in each region
4. find y-intercept
5. sketch

} yesterday
→ between zeros
let $x=0$ solve for y

For each problem:

degree
same
1 less

1. Determine

- a. maximum # of real zeros
- b. maximum # of x-intercepts
- c. maximum # of turning points

} that the graph
of the function
can have

2. Graph using the steps outlined above.

Graphing Polynomial Functions



$$-x=0 \quad x+1=0 \quad x-2=0$$

Examples

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

z	m	$core$	d
0	1+M	C	1+2+2
-1	2+E	t	<u>5</u>
2	2+E	<u>t</u>	<u>5</u>

max z ens: 5

max intercepts: 5

turning pts: 4

pt in region: $-1 \rightarrow 0$

$$(-\frac{1}{2}) \rightarrow f(-\frac{1}{2}) = -(-\frac{1}{2})(-\frac{1}{2}+1)^2(-\frac{1}{2}-2)^2$$

$$-(-\frac{1}{2})(\frac{1}{2})^2(-\frac{5}{2})^2$$

$$(\frac{1}{2})(\frac{1}{4})(\frac{25}{4}) = \frac{25}{32}$$

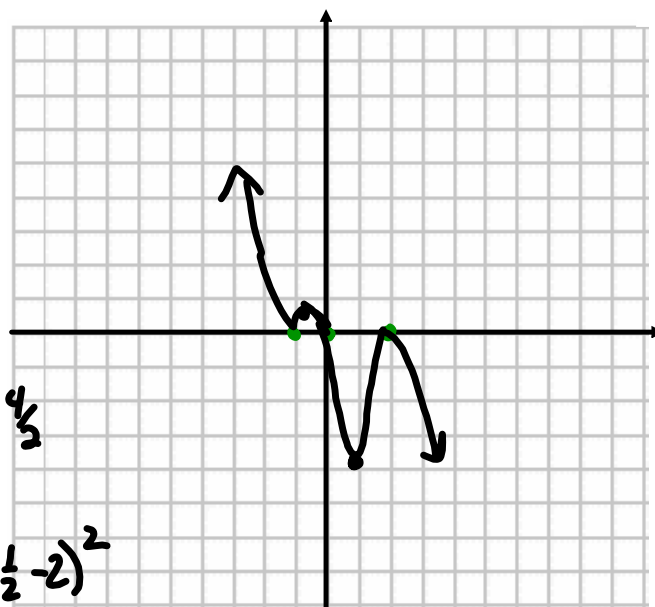
$$(-\frac{1}{2}, \frac{25}{32})$$

pt in region $0 \rightarrow 2$

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

$$f(1) = (-1)(4)(1) = -4$$

$$(1, -4)$$



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

2. $f(x) = -x(x-2)(x-2)(x+3)$

Let $x=0$

x	m	tor C	D	$y_{int}(0,0)$
0	$1 \rightarrow 0$	C	$1+2+1$	
2	$2 \rightarrow 0$	t	$4+1$	
-3	$1 \rightarrow 0$	C		

max zeros: 4
max intercept: 4
max t.pts: 3

end behavior

even $\rightarrow$ Neg

-3 and 0

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

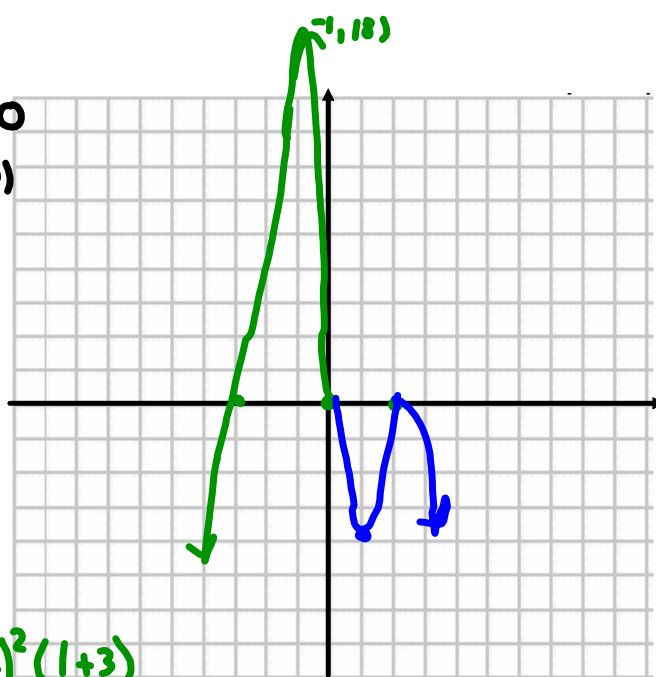
$$f(-1) = (1)(9)(2)$$

$$(-1, 18)$$

0 and 2

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

$$f(1) = -4$$



→ factor

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

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

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

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

x	m	to/c	D	end behavior
-2	1	C	3	odd → +
-1	1	C		
1	1	C		

points in region

-2 and -1
 $f(-3/2)$

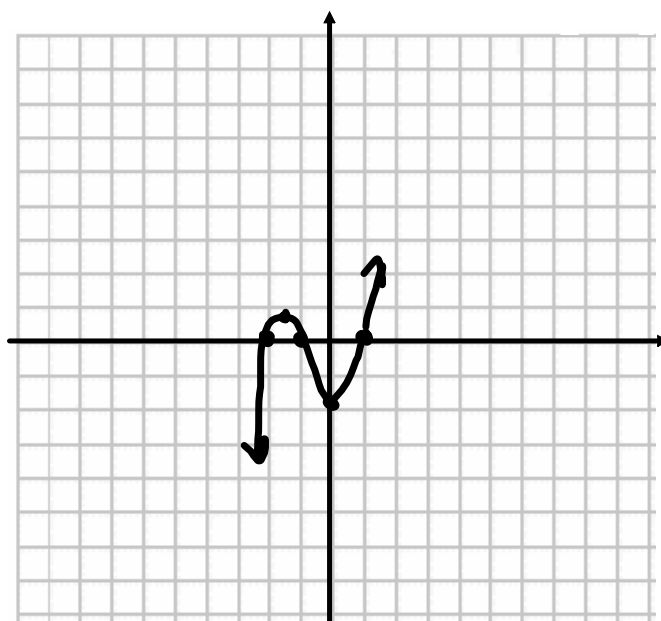
-1 and 1
 $f(0) = -2$

$$(-1.5+2)(1.5+1)(-1.5-1)$$

$$(\frac{1}{2})(-\frac{1}{2})(-\frac{3}{2}) = \frac{3}{8}$$

$$(-\frac{3}{2}, \frac{3}{8})$$

y-int: $(0, -2)$



HW: P. 283 # 2, 4, 6, 7 - 12

(do without calculator)

13, 20, 21

P. 270 # 11, 13, 34

Graded due Tomorrow