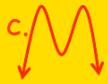
After you've checked your homework, do the front page of today's notes

HW 5 - 3 Answers

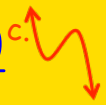
1. $(x - 2)(5x^2 + 3)$
2. $(x - 6)(x + 1)(x - 2)(x - 3)$
3. $(2x - 1)(4x^2 + 2x + 1)$
4. $(3x+5y^2)(9x^2-15xy^2+25y^4)$
5. $3(x + 2)(x - 2)(x + 1)$
6. $(x - 1)(-x + 4)$
7. $(x + 2)(9x + 2)$
8. $(y-1)(y+1)(y^2+y+1)(y^2-y+1)$

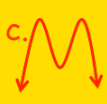
9. a. 5 b. - c. 

10. a. 6 b. + c. 

11. a. 4 b. - c. 

12. a. 3 b. + c. 

13. a. 3 b. - c. 

14. a. 6 b. - c. 

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Oct 28-7:39 PM

Factor each of the following:

1. $5x^3 - 10x^2 + 3x - 6$

$= 5x^2(x-2) + 3(x-2)$

$= (x-2)(5x^2+3)$

2. $(x^2 - 5x)^2 - 36$

3. $8x^3 - 1$

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

$(a-b)(a^2+ab+b^2)$

$a = 2x$

$b = 1$

4. $27x^3 + 125y^6$

Oct 29-10:32 AM

5. $3x^3 + 3x^2 - 12x - 12$

6. $(2x + 3)(x - 1) - (3x - 1)(x - 1)$

$= (x-1)[2x+3-(3x-1)]$
$= (x-1)[2x+3-3x+1]$
$= (x-1)(-x+4)$

7. $(4x + 3)(x + 2) + (5x - 1)(x + 2)$

8. $y^6 - 1$
(use your notes for this one)

Oct 29-10:34 AM

Without your calculator:
a. state degree
b. state the sign of the leading coefficient
c. sketch (no graph paper) the end behavior

9. $P(x) = -2x^5 + x^2 - 3x + 1$

a. _____

b. _____

c.

10. $P(x) = 4x^6 + 2x^3 - 1$

a. _____

b. _____

c.

11. $P(x) = -5x^4 - x^2 + 4x$

a. _____

b. _____

c.

12. $P(x) = 4x^3 + 3x - 2$

a. _____

b. _____

c.

13. $P(x) = -6x^3 - x^2 + 5$

a. _____

b. _____

c.

14. $P(x) = -4x^6 + 2x^3 - 1$

a. _____

b. _____

c.

Oct 29-10:34 AM

QUIZ

Turn your quiz over when done, then
finish the front page of today's notes.

Oct 25-8:08 PM

Multiplicity

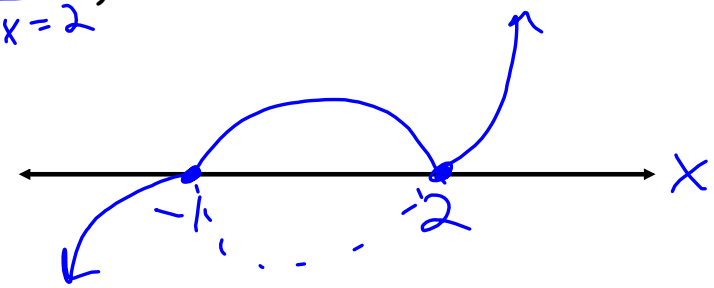
Oct 25-8:08 PM

Warm-Up: Without your calculator.
This equation is a combination of the last two from yesterday.
Try to sketch it.

x^2 x x^3 deg = 3 (odd) $+x^{odd}$

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

$x = -1$ / $x = 2$

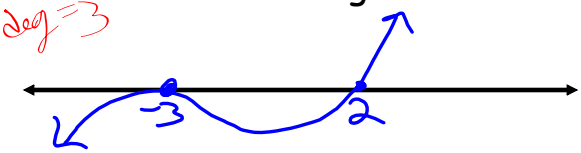


Oct 25-8:10 PM

Use your calculator to sketch each of the following:

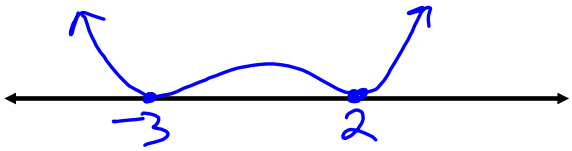
1. $P(x) = (x - 2)(x + 3)^2$

$x = 2$ $x = -3$ deg = 3



2. $Q(x) = (x - 2)^2(x + 3)^4$

$x = 2$ -3 deg = 6

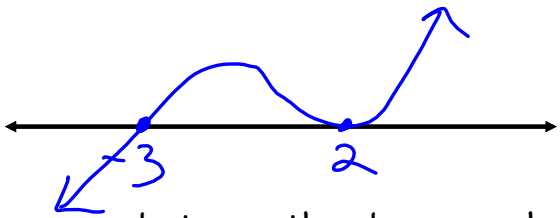


3. $R(x) = (x - 2)^4(x + 3)^5$

deg = 9

Same: deg = odd, same zeros

Diff: degrees



Describe the similarities and differences between the above graphs.

Oct 25-8:12 PM

A factor of $(ax - b)^k$ yields a repeated zero $x = b/a$ of multiplicity k.

- If k (power) is odd, graph crosses the x-axis at $x = b/a$
- If k (power) is even, graph is tangent to the x-axis at $x = b/a$

multiplicity k

odd – cross

even – tangent

$(x+2)^3$

Oct 25-8:15 PM

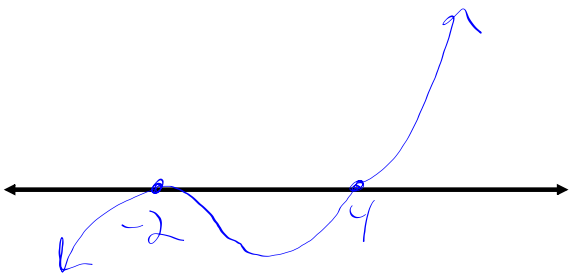
Find the zeros of each polynomial, state the multiplicity of each. Sketch (including the end behavior) – no calculators!

1. $P(x) = (x + 2)^2(x - 4)$

deg = 3 (odd)

$+x^{odd}$

Z	M/k	T/C
-2	2	T
4	1	C



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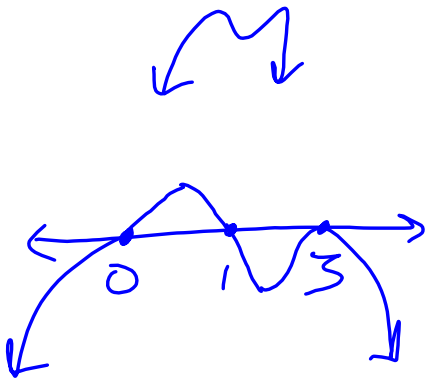
2. $Q(x) = -x(x-1)^3(x-3)^2$

deg = 6 even
$-x^{even}$

$-x=0$ $x=0$ | 1 | even odd

Z	M	T/C
0	1	C
1	3	C
3	2	T



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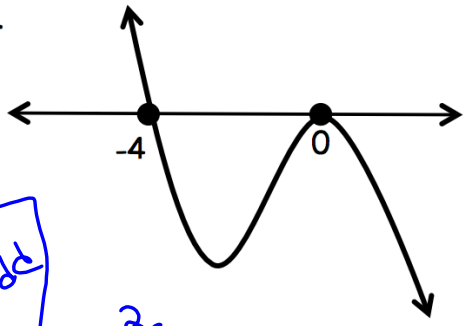
Given the following graphs, write a possible polynomial function for the graph.

3.

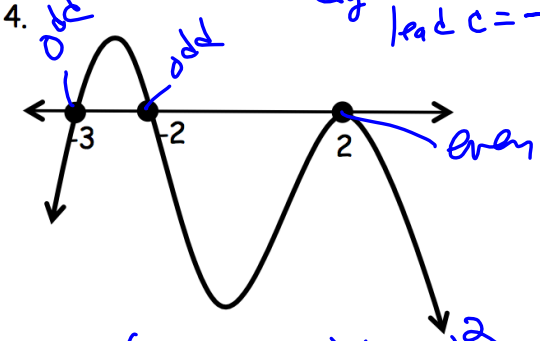


odd
$-x$

$-x^2(x+4)$

$p(x) = -x^2(x+4)$

4.



odd
0
odd
deg = even
lead c = −
even

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

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