Name: _____

5.Rev.2 ~ Polynomial Functions

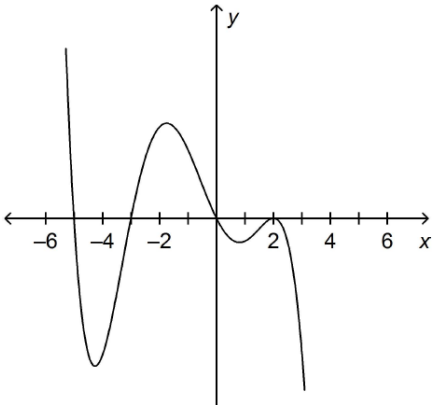
Past due on: _____ Period: _____

1. Find the zeros of $p(x) = x(x+5)(x+3)(x-2)^2$.

   Describe the end behavior of $p(x)$.

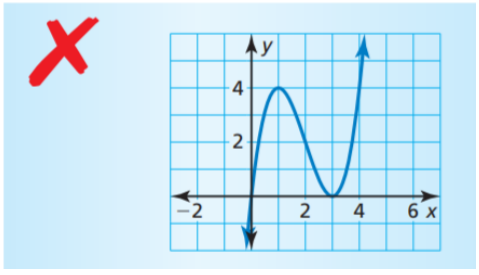
   $\lim_{x\to-\infty} f(x) =$ _____ $\lim_{x\to\infty} f(x) =$ _____

   Could the graph (at the right) represent $p(x)$? Explain your reasoning.

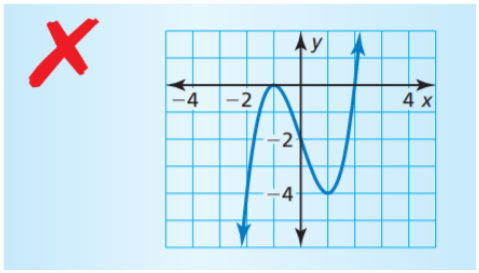


2. Describe the error in graphing the polynomial functions.

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



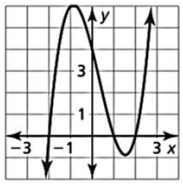
$f(x) = (x+2)(x-1)^2$



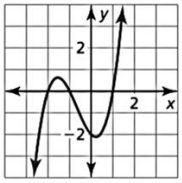
Match the function with its graph.

3. $f(x) = (x-1)(x-2)(x+2)$
4. $h(x) = (x+2)^2(x+1)$
5. $g(x) = (x+1)(x-1)(x+2)$
6. $f(x) = (x-1)^2(x+2)$

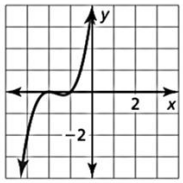
A.



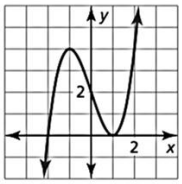
B.



C.



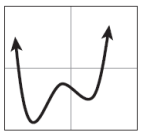
D.



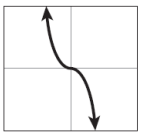
Problems 7 – 14, match each equation or description to one of the graphs.

7. $f(x) = -ax^3 + b$
8. $g(x) = ax^3 + \cdots + d$
9. $h(x) = ax^4 + \cdots - e$
10. $p(x) = ax^5 + \cdots - f$
11. $q(x) = -ax^5 + \cdots - g$
12. An even function with no x-intercepts and a positive leading term
13. An even function with three real zeros and a negative leading coefficient
14. An odd function symmetric about the origin with a negative leading coefficient

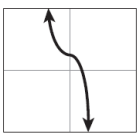
A.



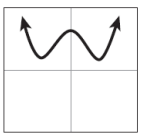
B.



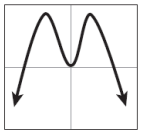
E.



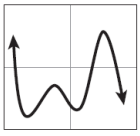
F.



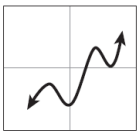
C.



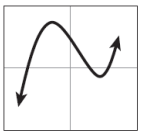
D.



G.



H.



Analyze each polynomial function for its long-run and short-run behavior. Sketch its graph by hand.

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

LEADING TERM:

x-INTERCEPTS:

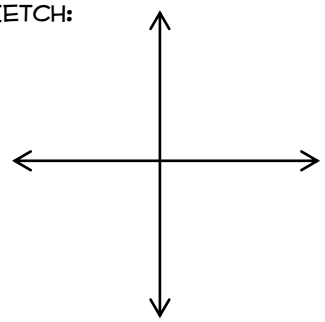
ZERO	MULTIPLICITY	CROSS OR TOUCH

END BEHAVIOR:

$\lim_{x\to-\infty} f(x) =$ $\lim_{x\to\infty} f(x) =$

y-INTERCEPT:

SKETCH:



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

LEADING TERM:

x-INTERCEPTS:

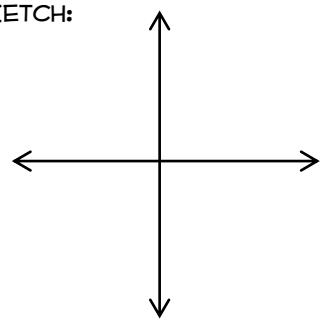
ZERO	MULTIPLICITY	CROSS OR TOUCH

END BEHAVIOR:

$\lim_{x\to-\infty} f(x) =$ $\lim_{x\to\infty} f(x) =$

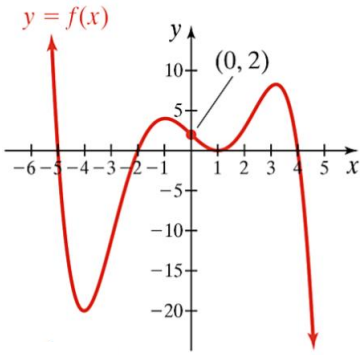
y-INTERCEPT:

SKETCH:

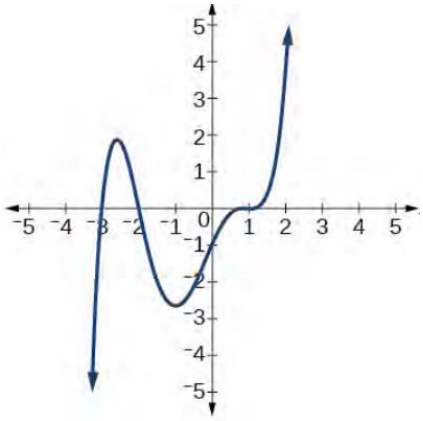


Find a formula for the polynomial whose graph is shown.

17.



18.



19. For the polynomial described, fill-in any indicated boxes. Sketch the polynomial **AND** write its formula in factored form.

LEADING TERM: *even & negative*

END BEHAVIOR:

$\lim_{x\to-\infty} f(x)$	$\lim_{x\to\infty} f(x)$

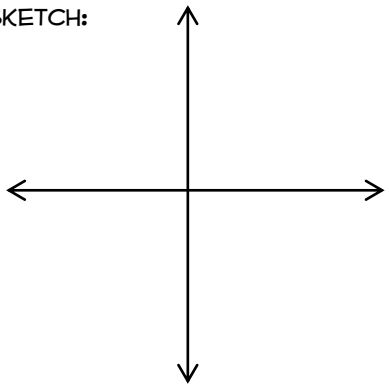
y-INTERCEPT < 0

PASSES THROUGH $(3, 128)$

x-INTERCEPTS:

ZERO	MULTI.	CROSS/ TOUCH
-5	2	
2	1	
4	1	

SKETCH:



FUNCTION FORMULA: