Secondary III 3-2 HW

Name: Selected Answers

Graphing Polynomials

Use a graphing calculator to graph the polynomial function. Then use the graph to determine the function's domain, range, and end behavior. (Use interval notation for the domain and range.)

1. $f(x)=x^7$

Domain: $(-\infty, \infty)$
Range: $(-\infty, \infty)$
End Behavior: ↓↑
as $x \to -\infty$, $f(x) \to -\infty$
as $x \to \infty$, $f(x) \to \infty$

2. $f(x)=-x^9$

3. $f(x)=x^{10}$

Domain: $(-\infty, \infty)$
Range: $[0, \infty)$

4. $f(x)=-x^4$

Use a graphing calculator to graph the function. Then use the graph to state the zeros and multiplicity of each zero.

5. $f(x)=x(x+1)(x+3)$

Zero	Multiplicity	Intersection
0	1	Straight
-1	1	Straight
-3	1	Straight

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

Zero	Multiplicity	Intersection

7. $f(x)=-x(x-2)^2$

Zero	Multiplicity	Intersection
0	1	Straight
2	2	tangent

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

Zero	Multiplicity	Intersection

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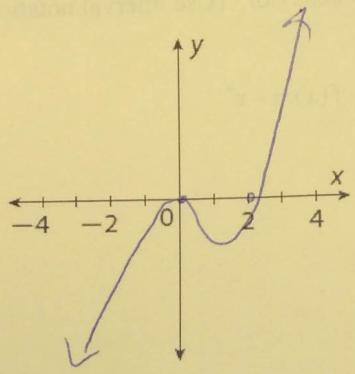
Sketch a graph of the polynomial function.

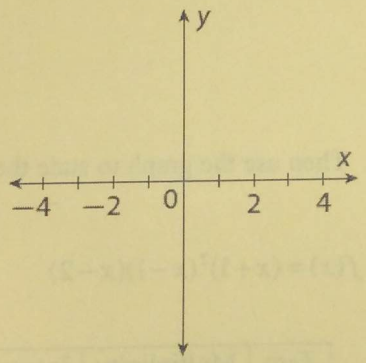
9. $f(x) = x^2(x-2)$



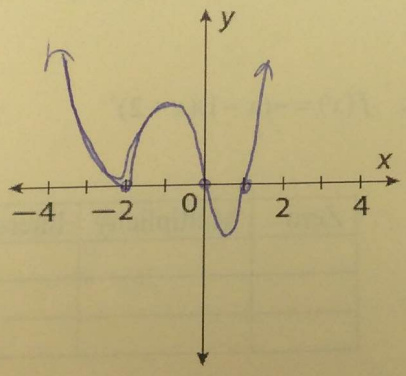
zeros: 0, 2
↑ tangent ↑ straight

EB: ↓↑

10. $f(x) = -(x+1)(x-2)(x-3)$



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



zeros: 0, -2, 1
↗ straight ↑ tangent ↖ straight

EB: ↑↑

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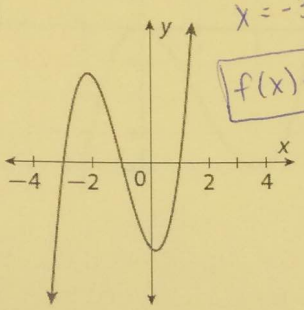
Write a cubic function in intercept form for the given graph, whose x-intercepts are integers. Assume that the constant factor a is either 1 or -1.

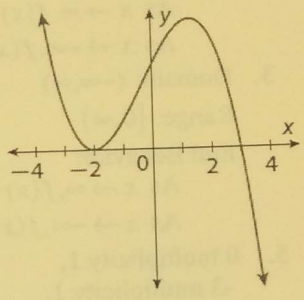
14.



$x = -3, -1, 1$

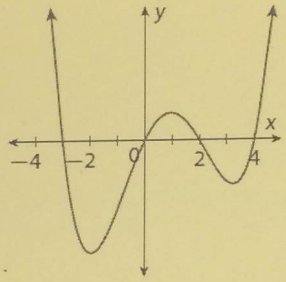
$f(x) = (x+3)(x+1)(x-1)$

15.



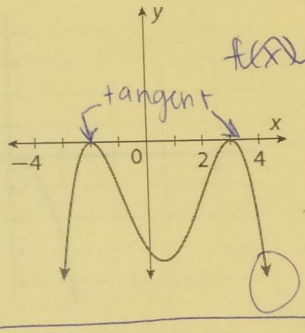
Write a quartic function in intercept form for the given graph, whose x-intercepts are integers. Assume that the constant factor a is either 1 or -1.

16.



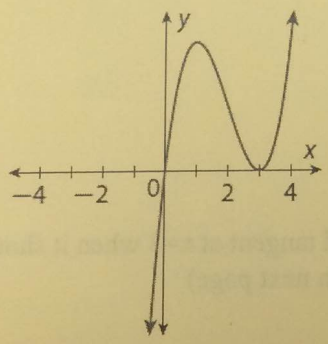
17.

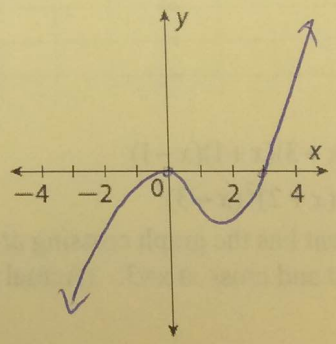
$x = -2, 2$



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

19. Explain the Error A student was asked to sketch the graph of the function $f(x) = x^2(x-3)$. Describe what the student did wrong. Then sketch the correct graph.





The student has the graph crossing at $x=0$ and tangent at $x=3$ when it should be tangent at $x=0$ and cross at $x=3$.