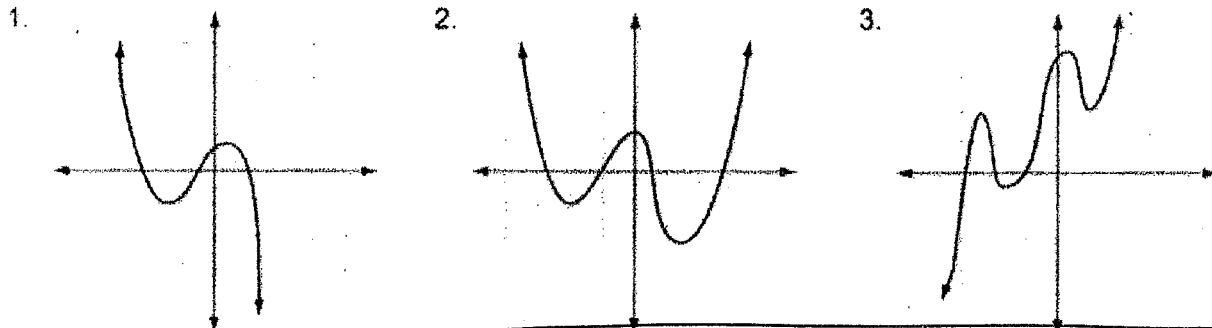


Unit 3 Module 5.4 Part 1

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient.



#	1	2	3
Degree	odd	even	odd
Lead Coef.	negative	positive	positive

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. Degree: odd
 Lead Coef: +
 X intercepts: $x = -3, x = -1, x = 1$
 Intercept form: $y = (x+3)(x+1)(x-1)$
 $y = (x^2 + 4x + 3)(x-1)$
 $y = x^3 - x^2 + 4x^2 - 4x + 3x - 3$

15. Degree: odd
 Lead Coef: negative
 X intercepts: $x = -2, x = 3$
 Intercept form: $y = -(x+2)^2(x-3)$
 $y = (x^2 + 4x + 4)(x-3)$
 $y = x^3 - 3x^2 + 4x^2 - 12x + 4x - 12$

Standard form $y = x^3 + 3x^2 - x - 3$

Stand. form $y = x^3 + x^2 - 8x - 12$

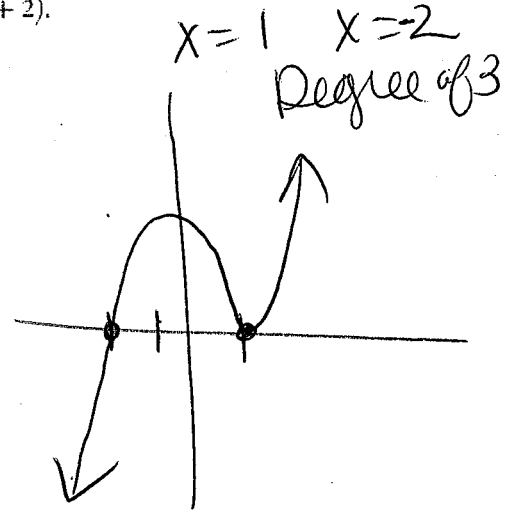
Write a quartic function in intercept form for the given graph, whose x-intercepts are integers. Assume that the constant factor a is either 1 or -1 .

16. Degree: Even
 Lead Coef: Positive
 X int: $x = -3, x = 0, x = 2, x = 4$
 Intercept form: $y = (x+3)(x+0)(x-2)(x-4)$
 Standard form: $y = (x^3 + 3x)(x^2 - 6x + 8)$
 $y = x^4 - 3x^3 - 10x^2 + 24x$

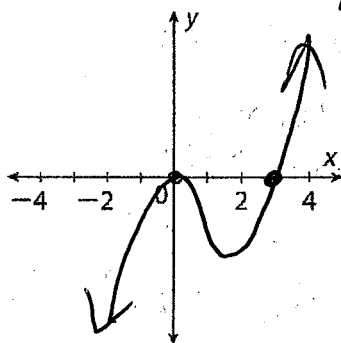
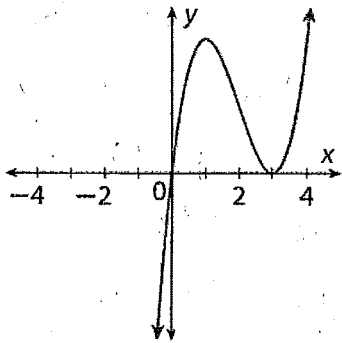
17. Degree: even
 Lead Coef: negative
 X int: $x = -2, x = 3$
 Intercept form: $y = -(x+2)^2(x-3)^2$
 Standard form: $y = -(x^4 - 2x^3 + 11x^2 - 12x + 36)$
 $y = -x^4 + 2x^3 + 11x^2 - 12x - 36$

18. Multiple Response Select all statements that apply to the graph of $f(x) = (x - 1)^2(x + 2)$.

- A. The x -intercepts are $x = 1$ and $x = -2$.
- B. The x -intercepts are $x = -1$ and $x = 2$.
- C. The graph crosses the x -axis at $x = 1$ and is tangent to the x -axis at $x = -2$.
- D. The graph crosses the x -axis at $x = -1$ and is tangent to the x -axis at $x = 2$.
- E. The graph is tangent to the x -axis at $x = 1$ and crosses the x -axis at $x = -2$.
- F. The graph is tangent to the x -axis at $x = -1$ and crosses the x -axis at $x = 2$.



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.



x intercepts $x = 0$
 $\&$ $x = 3$
 crosses at 3
 and tangent at 0