**7.*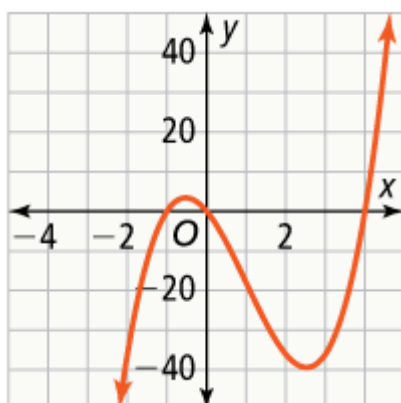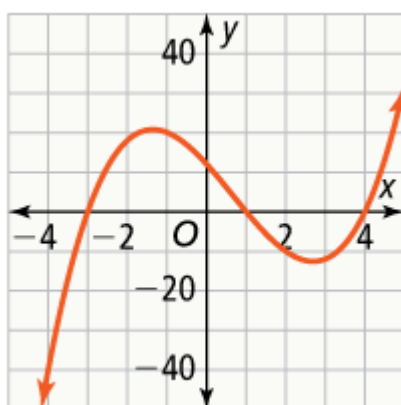* Tonya should have factored the polynomial after finding a zero from the graph. The function has one real root at $x = -1$, but also two complex roots at $x = -1 + 2i$ and $x = -1 - 2i$.

9. When a graph has a multiplicity of a zero that is even, the graph only touches the x-axis, and turns back without crossing. That never occurs in the graph of this polynomial function.

12.

13.

14. 0, 4; The graph crosses the x-axis at 0, and it touches the x-axis at 4.

15. − 5, 1, 5; The graph crosses the x-axis at −5 , 1, and 5.

16. $\pm\frac{2}{3}; \pm 4$; The graph crosses the x-axis at each zero.

17. The zeros of the polynomial function are: 3, −1 + i ,and −1 − i .

19. $x = -5, 2$

21. $x = -3, 0, -2i, 2i$

23. all real numbers such that $-2 < x < -\frac{1}{2}$ or $x > \frac{1}{2}$

27. a. $x(x+4)(x-2)$

b. $x = -4$, $x = 0$, and $x = 2$

c. $x - 2$ represents the height of the box and $x + 4$ represents the length.

d. height = 4 in; width = 6 in; length = 10 in.

29. C