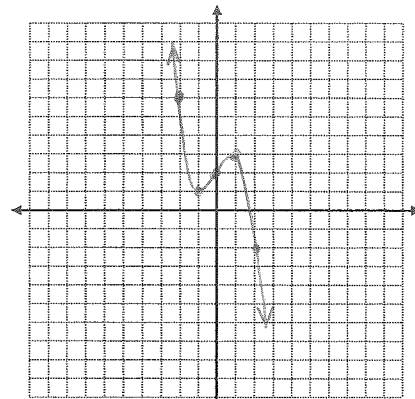


Ch. 6 Review

1. Sketch the graph of each function and state the characteristics. (types A, B, C)

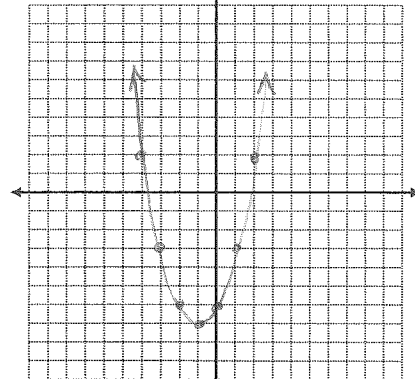
a) $y = -x^3 + 2x + 2$

Type: cubic
 Degree: 3
 Number of x-intercepts: 1
 The y-intercept: 2
 The End Behavior: Q2 → Q4
 Domain: $x \in \mathbb{R}$
 Range: $y \in \mathbb{R}$
 Number of Turning Points: 2



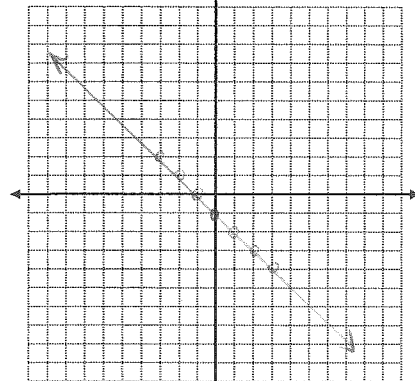
b) $y = x^2 + 2x - 6$

Type: quadratic
 Degree: 2
 Number of x-intercepts: 2
 The y-intercept: -6
 The End Behavior: Q2 → Q1
 Domain: $x \in \mathbb{R}$
 Range: $y \geq -7$
 Number of Turning Points: 1



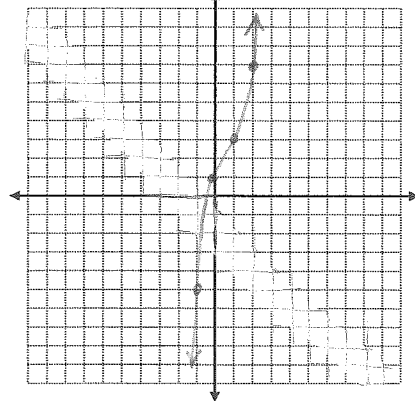
c) $y = -x - 1$

Type: linear
 Degree: 1
 Number of x-intercepts: 1
 The y-intercept: -1
 The End Behavior: Q2 → Q4
 Domain: $x \in \mathbb{R}$
 Range: $y \in \mathbb{R}$
 Number of Turning Points: 0



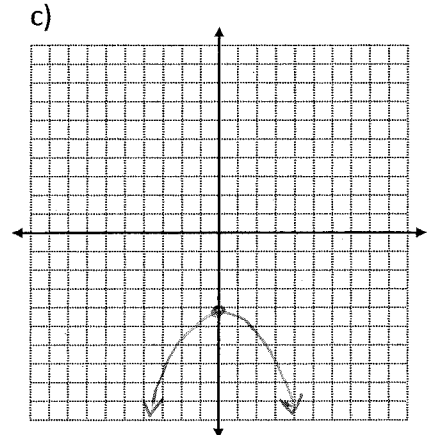
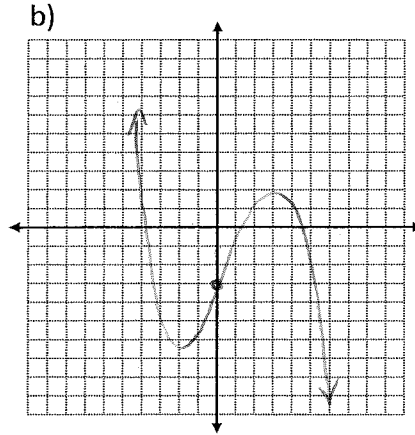
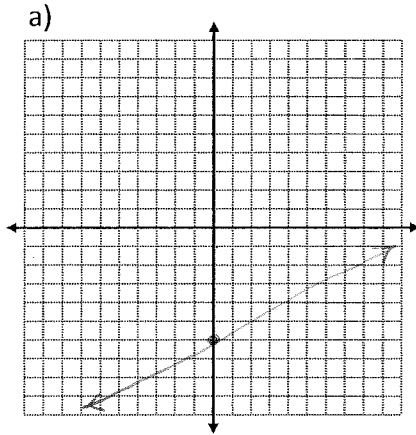
d) $y = x^3 - 2x^2 + 3x + 1$

Type: cubic
 Degree: 3
 Number of x-intercepts: 1
 The y-intercept: 1
 The End Behavior: Q3 → Q1
 Domain: $x \in \mathbb{R}$
 Range: $y \in \mathbb{R}$
 Number of Turning Points: 0



2. Sketch the graph of a polynomial function that satisfies each set of characteristics: (type D)

- a) Extending from quadrant III to quadrant I, y-intercept of -6 , degree 1.
- b) Extending from quadrant II to IV, two turning points, y-intercept of -3 .
- c) Extending from quadrant III to quadrant IV, degree 2, y-intercept of -4 .



3. Write an equation of a polynomial function that satisfies each set of characteristics above. (type E)

- a) $y = x - 6$
- b) $y = -x^3 + x^2 + x - 3$
- c) $y = -x^2 + x - 4$

4. Toby recorded the following odometer measurements during a single trip in his car:

Distance (km)	2	5	8	10	11	15	20	30	33
Time (min)	2	6	10	13	14	19	23	35	40

a) Create a scatter plot for data and determine the equation of the linear regression function. (type F)

$$y = 1.1802x + 0.4281$$

b) What was the time it took for Toby to travel 25km? (type G)

~ 30 minutes

c) What is possible distance he travelled in 45 minutes? (type G)

~ 38 km

5. A spherical balloon is being inflated. The surface area, A , in square meters, is related to the time, t , in minutes.

Surface Area	13	28	50	79	113
Time (t)	0	1	2	3	4

- a) Create a scatter plot for the data and determine the quadratic regression function that models the data. (type F)

$$y = 3.2143x^2 + 12.2429x + 12.8286$$

- b) Use your function to interpolate $x = 2.5$. (type G)

$$\sim 63.5$$

- c) Use your function to extrapolate $x = 5$ (type G)

$$\sim 154.4$$

6. A golf club manufacturer recorded the path of a golf ball from tee to green on a par 3 hole. The data shows the height, h meters, of the golf ball above the ground after t seconds.

Time (s)	0	0.7	1.4	2.1	2.8	3.5	4.2	4.9
Height (m)	0.03	15.13	25.43	30.92	31.61	27.50	18.59	4.88

- a) Create a scatterplot and determine which function best models the data. Find the line or curve of best fit accordingly. (type F)

Quadratic

$$\Rightarrow y = -4.8998x^2 + 24.9979x + 0.0321$$

- b) Determine the height of the ball after 3 seconds. (type G)

$$\sim 30.9 \text{ m}$$

- c) Determine the maximum height of the ball above the ground. (type G)

$$\sim 31.9 \text{ m}$$

- d) Determine how long it takes for the ball to hit the ground. (type G)

$$\sim 5.1 \text{ seconds}$$

MORE PRACTICE:

Types A – C : p. 427 # 1, 2, 3, 4 (use Question #1 above as a guide)

Type D: p. 424 # 3

Type E: Sketch a possible graph of p. 424 # 3

Type F & G: p. 427 # 6, 8, 10