Name _____ Date _____ Class _____

LESSON 6-7

Practice B

Investigating Graphs of Polynomial Functions

Identify the leading coefficient, degree, and end behavior.

1. $P(x) = 2x^5 - 6x^3 + x^2 - 2$

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2. $Q(x) = -4x^2 + x - 1$

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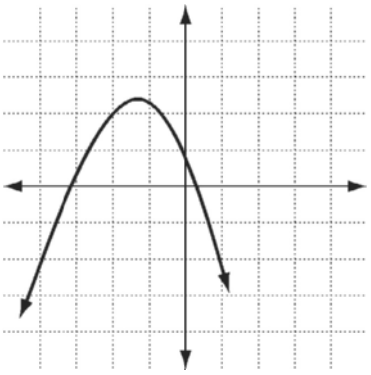
Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient.

3. 

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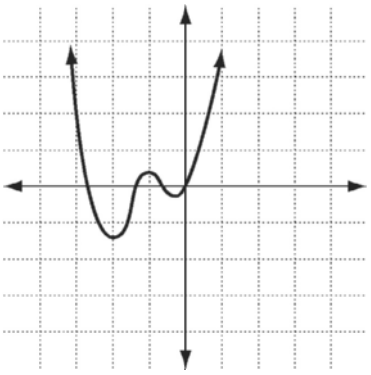
4. 

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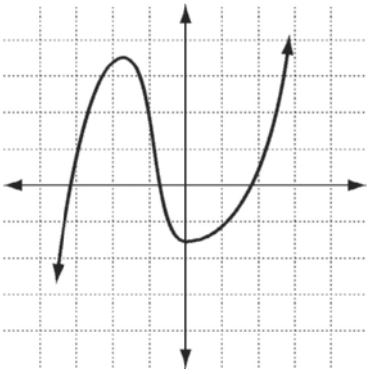
5. 

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Graph the function $P(x) = x^3 + 6x^2 + 5x - 12$.

6. Identify the possible rational roots.

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7. Identify the zeros.

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8. Describe the end behavior of the function.

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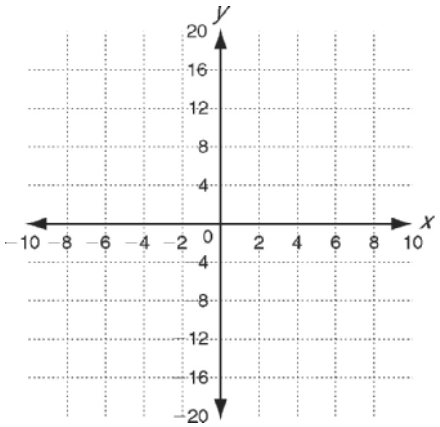
9. Sketch the graph of the function.



Solve.

10. The number, $N(y)$, of subscribers to a local magazine can be modeled by the function $N(y) = 0.1y^4 - 3y^3 + 10y^2 - 30y + 10{,}000$, where y is the number of years since the magazine was founded. Graph the polynomial on a graphing calculator and find the minimum number of subscribers and the year in which this occurs.

_____

negative, so they cannot be the radius.

7. 0.5 inch

Reading Strategies

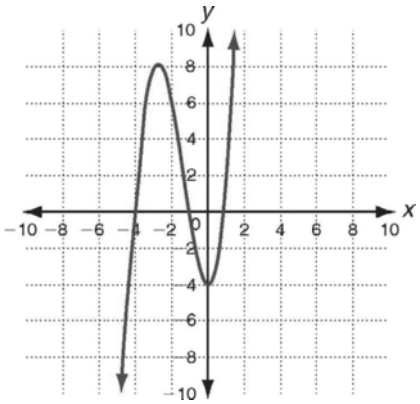
1. Find the factors corresponding to the roots and multiply the factors.
2. x
3. a. $(x + 2)(x + 2)(x + 2) = 0$, or $x^3 + 6x^2 + 12x + 8$.

   b. because multiplying the equation by a nonzero number will not change its roots
4. a. $(x)(x)(x)(x + 2) = x^4 + 2x^3 = 0$

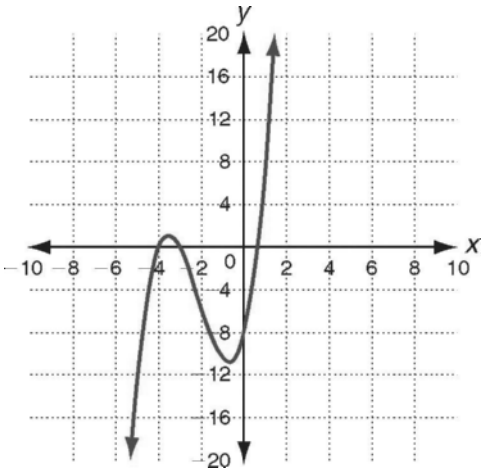
   b. 4

LESSON 6-7

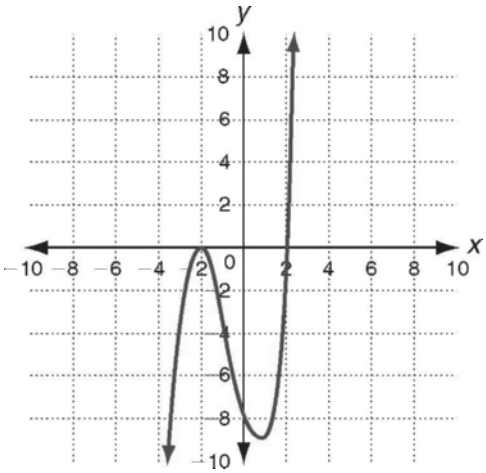
Practice A

1. 1; 2
2. –3; 3
3. 2; 4; $x \to -\infty$, $P(x) \to +\infty$; $x \to +\infty$, $P(x) \to +\infty$
4. –6; 5; $x \to -\infty$, $P(x) \to +\infty$; $x \to +\infty$, $P(x) \to -\infty$
5. $\pm 1, \pm 2, \pm 4$
6. $(x - 1)(x^2 + 5x + 4)$
7. $(x - 1)(x + 4)(x + 1)$
8. y-intercept = –4; $P(-2) = 6$; $P(-3) = 8$
9. As $x \to -\infty$, $P(x) \to -\infty$, as $x \to +\infty$, $P(x) \to +\infty$
10. 

Practice B

1. 2; 5; as $x \to +\infty$, $P(x) \to +\infty$; and as $x \to -\infty$, $P(x) \to -\infty$
2. –4; 2; as $x \to -\infty$, $Q(x) \to -\infty$; and as $x \to +\infty$, $Q(x) \to -\infty$
3. Even; negative
4. Even; positive
5. Odd; positive
6. $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$
7. –4, –3, and 1
8. As $x \to +\infty$, $P(x) \to +\infty$, and as $x \to -\infty$, $P(x) \to -\infty$
9. 
10. About 5400 in year 20

Practice C

1. –6; 4; as $x \to -\infty$, $R(x) \to -\infty$: and as $x \to +\infty$, $R(x) \to -\infty$
2. –16; 3; as $x \to -\infty$, $Q(x) \to +\infty$: and as $x \to +\infty$, $Q(x) \to -\infty$
3. Odd; negative
4. Even; positive
5. Odd; positive
6. 
7. Minima: 4.5; maxima: 5.1 and 13.5
8. Minima: –8.68; maxima: 0
9. a. 3.03 m^3

   b. 1.9 m by 2.9 m by 0.55 m