

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Classify the polynomial as cubic or quartic.

1) $f(x) = 12x^4 - 12 + 0.18x^2 - 5x$

A) Cubic

B) Quartic

Solve the problem.

2) A population of birds in a small county can be modeled by the polynomial $f(x) = x^3 - 57x^2 + 1162x + 1094$, where $x = 1$ corresponds to July 1, $x = 2$ to July 2, and so on. For what days does f estimate the population to be 8550?

A) July 12th

B) July 11th

C) July 14th

D) July 13th

Classify the polynomial as cubic or quartic.

3) $g(x) = 282x^2 + 4147x^3$

A) Cubic

B) Quartic

Determine a window which gives a complete graph of the polynomial function.

4) $y = 3x^3 - 26x^2 + 18x - 47$

A) $[-5, 5]$ by $[-500, 100]$

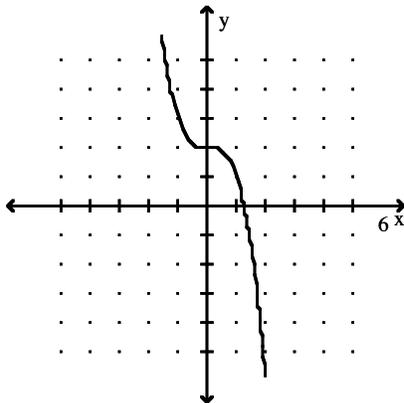
B) $[-8, 10]$ by $[-100, 300]$

C) $[-3, 10]$ by $[-400, 100]$

D) $[-10, 10]$ by $[-150, 150]$

State whether the leading coefficient is positive or negative.

5)



A) 4: Leading coefficient is positive.

B) 4: Leading coefficient is negative.

C) 3: Leading coefficient is negative.

D) 3: Leading coefficient is positive.

Classify the polynomial as cubic or quartic.

6) $h(x) = 2.1x^3 + 14x^2 - x + \frac{5}{8}$

A) Quartic

B) Cubic

Determine a window that will provide a comprehensive graph of the polynomial function.

7) $y = 3x^3 - 26x^2 + 18x - 47$

- A) $[-8, 10]$ by $[-100, 300]$ B) $[-3, 10]$ by $[-400, 100]$
C) $[-10, 10]$ by $[-150, 150]$ D) $[-5, 5]$ by $[-500, 100]$

Use a graphing calculator to estimate the local maximum and local minimum values of the function to the nearest hundredth.

8) $y = 3x^3 - 4x^2 - 6x + 2$

- A) Loc max value 3.17, loc min value 1.60 B) Loc max value 3.63, loc min value -6.01
C) Loc max value 1.60, loc min value -0.71 D) Loc max value -0.71, loc min value -5.56

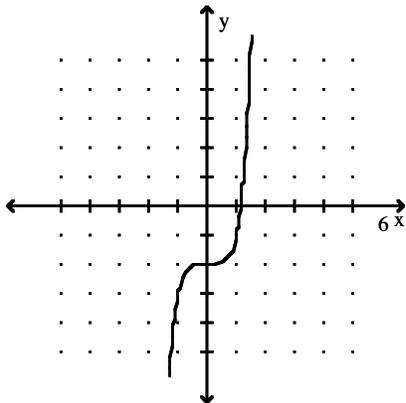
Predict the end behavior of the graph of the function.

9) $f(x) = -x^3 - 7x^2 - 8x + 2$

- A) Up on both sides B) Up on left side, down on right side
C) Down on left side, up on right side D) Down on both sides

State whether the leading coefficient is positive or negative.

10)



- A) 2: Leading coefficient is negative. B) 3: Leading coefficient is negative.
C) 2: Leading coefficient is positive. D) 3: Leading coefficient is positive.

Classify the polynomial as cubic or quartic.

11) $f(x) = -9x^2 - 8x^3 + x^4$

- A) Quartic B) Cubic

Approximate the coordinates of each turning point by graphing $f(x)$ in the standard viewing rectangle.

12) $y = x^2 - 6x + 7$

- A) $(3, -6)$ B) $(-3, -2)$ C) $(-3, -6)$ D) $(3, -2)$

State the degree and leading coefficient of the polynomial function.

13) $f(x) = -6x^4 - 3x^3 + 9$

- A) Degree: -6; leading coefficient: 4 B) Degree: 4; leading coefficient: -6
C) Degree: 7; leading coefficient: -6 D) Degree: 8; leading coefficient: -6

Solve the problem.

14) Ariel, a marine biologist, models a population P of crabs, t days after being left to reproduce, with the function

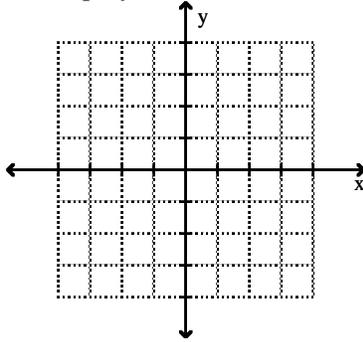
$$P(t) = -0.00006t^3 + 0.016t^2 + 7t + 1200.$$

Assuming that this model continues to be accurate, when will this population become extinct? (Round to the nearest day.)

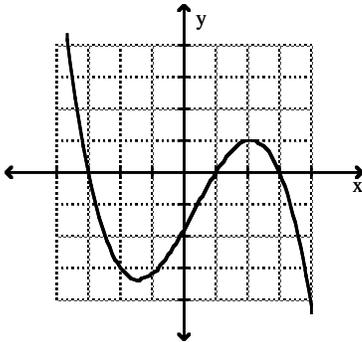
- A) 707 days B) 1512 days C) 547 days D) 911 days

Pick which graph satisfies the given conditions.

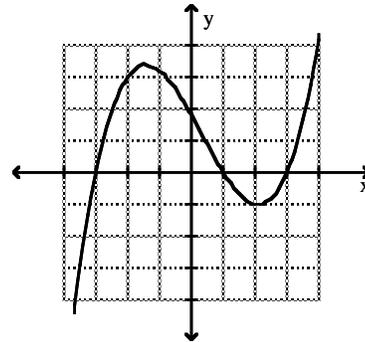
15) Cubic polynomial with two distinct real zeros and a positive leading coefficient



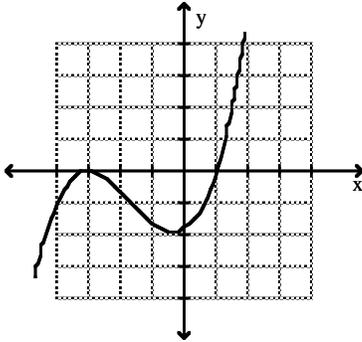
A)



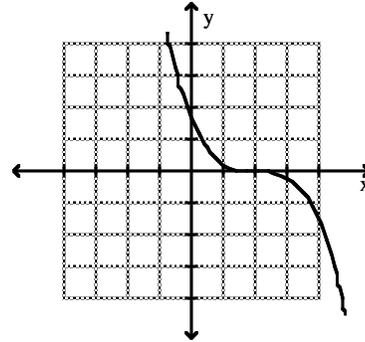
B)



C)



D)



Determine a window which gives a complete graph of the polynomial function.

16) $y = 2x^4 + 2x^3 - 4x^2 - 3x - 6$

- A) $[-5, 5]$ by $[-2, 1]$ B) $[-2, 2]$ by $[-10, -5]$
 C) $[-3, 3]$ by $[-10, 5]$ D) $[-3, 3]$ by $[-3, 4]$

Classify the polynomial as cubic or quartic.

$$17) g(x) = \frac{1}{2}x^3 - 12x + 7$$

A) Cubic

B) Quartic

Predict the end behavior of the graph of the function.

$$18) f(x) = -5(x - 6)^2(x + 6)^2$$

A) Down on the right side, up on the left side

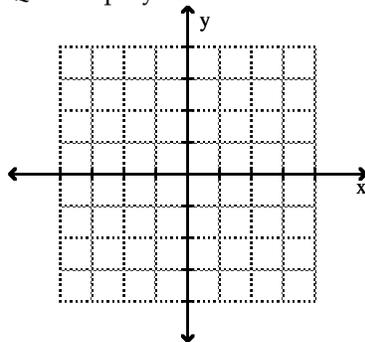
B) Up on both sides

C) Down on both sides

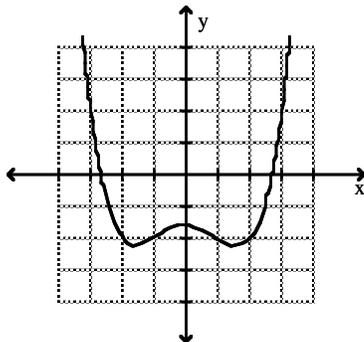
D) Up on the right side, down on the left side

Pick which graph satisfies the given conditions.

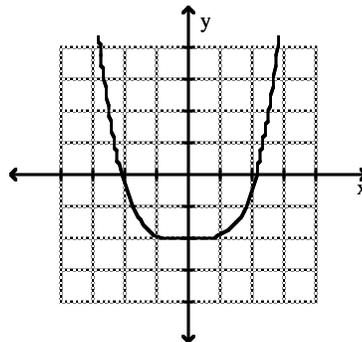
19) Quartic polynomial with one real zero and a positive leading coefficient



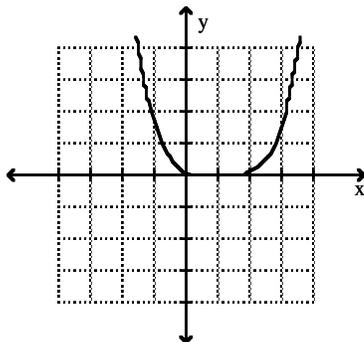
A)



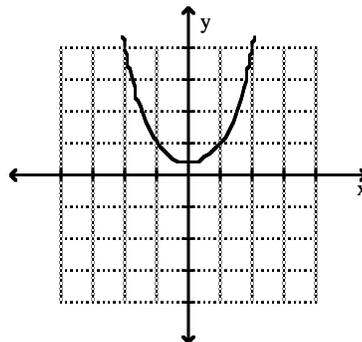
B)



C)



D)



State the degree and leading coefficient of the polynomial function.

$$20) f(x) = -7 + 13x - 16x^2 + 3x^3 + 5x^4$$

A) Degree: -7; leading coefficient: 5

B) Degree: 4; leading coefficient: 5

C) Degree: 4; leading coefficient: -7

D) Degree: 3; leading coefficient: 3