

2.1–2.4

DATE _____

2 Chapter Quiz

NAME _____

1. Write an equation in standard form for the parabola that has vertex $(3, -2)$ and passes through the point $(1, 14)$.
1. _____
2. Draw the graph of $f(x) = 0.05x^3 + 6x^2 - 2x - 3$ in the $[-15, 10]$ by $[-100, 175]$ viewing rectangle. How many real zeros are evident from this graph?
A. 1 B. 2
C. 3 D. 0
E. Infinitely many
2. _____
3. Describe the end behavior of the polynomial function $f(x) = -6x^3 + 2x^2 + 3x - 8$.
3. $f(x) \rightarrow$ _____ as $x \rightarrow -\infty$;
 $f(x) \rightarrow$ _____ as $x \rightarrow \infty$
4. Use the Remainder Theorem to find the remainder when $x^3 - 6x^2 + 5x - 2$ is divided by $x - 6$.
4. _____
5. Find a polynomial of degree 3 whose zeros are $-3, \frac{3}{2}, 2$.
A. $2x^3 - x^2 - 15x - 18$
B. $2x^2 + 3x - 9$
C. $2x^2 - 7x + 6$
D. $2x^3 - x^2 - 15x + 18$
E. $2x^3 - 7x^2 - 15x + 18$
5. _____
6. Use long division to find the remainder when $x^4 - 3x^2 + 5x - 1$ is divided by $x^2 - 3$.
6. _____
7. Use synthetic division to divide $\frac{3x^3 - 2x^2 + 5x - 3}{x + 2}$.
Summarize your results by writing a fraction equation.
 $\frac{3x^3 - 2x^2 + 5x - 3}{x + 2} =$ _____
7. _____
8. A contractor purchases a new bulldozer for \$45,000. After 15 years the bulldozer will be outdated and have no value. Write a linear equation giving the value V of the equipment during the 15 years it will be used, where t is the number of years after purchase.
8. _____

2.1–2.4

2 Chapter Quiz *(continued)*

NAME _____

9. The formula $h = -16t^2 + v_0t + s_0$ gives the height of an object tossed upward where v_0 represents the initial velocity, s_0 represents the initial height, and t represents time. A golf ball is hit straight up from the ground level with an initial velocity of 72 ft/sec. Find the maximum height that the ball reaches and the number of seconds it takes to reach that height.

9. Max. ht. = _____

Time = _____

10. The manager of 100 apartments knows that at \$600 rent per month, all apartments will be rented. For each \$25 increase, one apartment will not be occupied. Let x represent the number of \$25 increases to the rent.

(a) Write the revenue as a function of x .

(b) What rent per unit will yield maximum revenue?

(c) What is the maximum revenue?

10. (a) _____

(b) _____

(c) _____

2.5-2.8

DATE _____

2 Chapter Quiz

NAME _____

1. Find the domain of $f(x) = \frac{x^3 + 5x^2 - 2}{x^2 - 2}$.

- A. $(-\infty, -2) \cup (-2, 2)$
- B. $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$
- C. $(-\infty, -\sqrt{2}) \cup (-\sqrt{2}, \sqrt{2})$
- D. $(-\infty, -\sqrt{2}) \cup (-\sqrt{2}, \sqrt{2}) \cup (\sqrt{2}, \infty)$
- E. $(-\infty, \infty)$

1. _____

2. Find all rational zeros of $f(x) = 2x^3 - x^2 - 23x - 20$.

2. _____

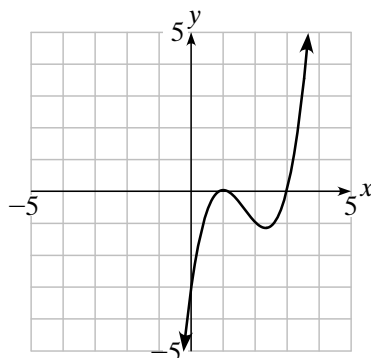
3. Find all the zeros of $f(x) = x^4 - x^3 - x^2 - x - 2$.

3. _____

4. Write a linear factorization of $f(x) = x^3 + 6x - 7$.

4. _____

5. Which of the following gives the zeros of the graph and their multiplicity?



5. _____

- A. 1 (multiplicity 1), 3 (multiplicity 2)
- B. 1 (multiplicity 3), 2 (multiplicity 1)
- C. 1 (multiplicity 3), 3 (multiplicity 1)
- D. 1 (multiplicity 2), 3 (multiplicity 1)
- E. 1 (multiplicity 1), 2 (multiplicity 3)

6. Solve the inequality $\frac{x + 5}{|x - 2|} \leq 0$.

6. _____

2.5–2.8

2 Chapter Quiz *(continued)*

NAME _____

7. Solve the rational equation $\frac{x(2x + 1)}{x - 2} = \frac{10}{x - 2} - \frac{5}{2}$.

7. Root: _____

Extraneous root: _____

8. Find a polynomial of degree 2 with real-number coefficients and zero $3 - 2i$.

8. _____

9. Solve the inequality $\frac{3x + 2}{(x + 1)(2x)} \leq 0$.

9. _____

10. Find all the asymptotes and the intercepts of the function $f(x) = \frac{x^2 - 3x + 5}{x + 2}$.

10. _____

FORM A

DATE _____

2 Chapter Test

NAME _____

Directions: Show all work where appropriate. A graphing calculator may be necessary to answer some questions.

1. Divide $x^3 - 2x^2 + 4x - 2$ by $x - 3$.

1. Quotient: _____

Remainder: _____

2. What is the remainder when $x^{29} - 7x^{14} + 8$ is divided by $x - 1$?

2. _____

3. An antique vase is projected to be worth \$1,000 in 2 years and \$1,300 after 5 years. If the value of the vase continues to appreciate at this same rate, what will it be worth in 8 years?

3. _____

4. Which one of the following is a polynomial with *real* coefficients that has 2 and $2 - i$ as zeros?

4. _____

A. $(x + 2)(x - 2 - i)$ D. $(x - 2)(x^2 - 4x + 5)$

B. $(x - 2)(x + 2 + i)$ E. $(x + 2)(x^2 + 5)$

C. $(x + 2)(x^2 - 4x + 5)$

5. Find all zeros of $f(x) = x^3 - x^2 + x - 21$ and write a linear factorization of $f(x)$.

5. Zeros: _____

$f(x) =$ _____

6. What is the minimum value for the function $y = 2x^2 - 32x + 256$?

6. _____

7. The line $x = 3$ is the axis of symmetry for the graph of a parabola. If the parabola contains the points $(1, 0)$ and $(4, -3)$, what is the equation for the parabola?

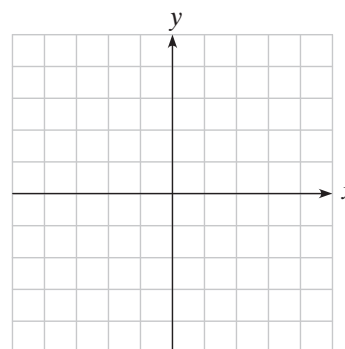
7. _____

8. A photograph is 4 in. longer than it is wide. If the frame is 2 in. wide, the combined area of the photograph and the frame is 252 in.^2 . Find the dimensions of the photograph without the frame.

8. _____

9. Graph the function $2x^4 - 3x^3 - 4x^2 + 2x + 2$. Choose a viewing window that shows three local extremum values and all the x -intercepts. Make a sketch of the grapher window, and show the viewing window dimensions.

9. _____



FORM A

2 Chapter Test (continued)

NAME _____

10. Describe the end behavior of the polynomial function $f(x) = -2x^4 - 3x^3 + 3x - 5$.

10. $f(x) \rightarrow$ _____ as $x \rightarrow -\infty$;

$f(x) \rightarrow$ _____ as $x \rightarrow \infty$

11. Identify the horizontal and vertical asymptotes for the function $f(x) = \frac{3x^2}{x^2 - 7x + 12}$.

11. Horizontal: _____

Vertical: _____

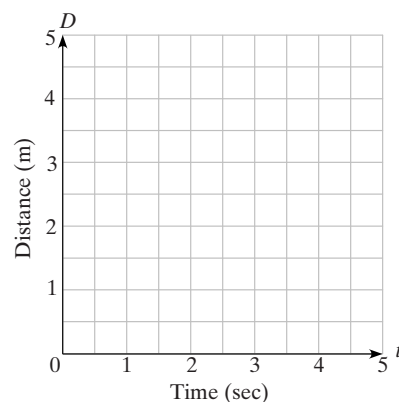
12. Solve the inequality $\frac{x - 6}{|2x - 4|} \geq 0$.

12. _____

13. Raymond's distance D from a motion detector is given by the data below. Find a cubic regression equation (with coefficients expressed to the nearest thousandth), and graph it together with a scatter plot of the data.

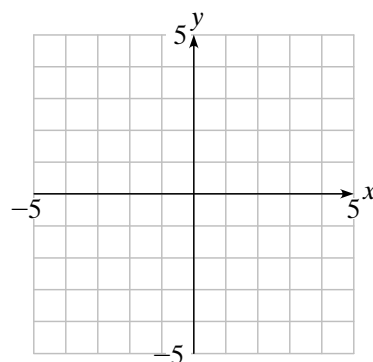
$t(\text{sec})$	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
$D(m)$	2.8	3.9	4.3	4.0	3.3	2.5	1.8	1.2	0.9	1.6	2.7

13. _____



14. In the space below, identify all asymptotes and intercepts of the function $g(x) = \frac{x - 5}{x^2 + x - 6}$. Then sketch a graph of $g(x)$.

14. _____



15. Tell how the graph of $y = -3 + \frac{4}{x + 2}$ can be

15. _____

obtained from the graph of $y = \frac{1}{x}$ by using transformations.

16. Solve the inequality $\frac{(x - 5)^3}{x(x + 2)} \geq 0$.

16. _____

FORM B

DATE _____

2 Chapter Test

NAME _____

Directions: Show all work where appropriate. A graphing calculator may be necessary to answer some questions.

1. Divide $x^3 + 3x^2 - 8x + 7$ by $x - 2$.

1. Quotient: _____

Remainder: _____

2. What is the remainder when $x^{32} - 5x^{15} + 12$ is divided by $x + 1$?

2. _____

3. The value of an antique chair is projected to appreciate \$60 each year. If the chair will be worth \$650 in 2 years, what will it be worth in 10 years?

3. _____

4. Which one of the following is a polynomial with *real* coefficients that has -2 and $2 + i$ as zeros?

4. _____

A. $(x + 2)(x - 2 - i)$

B. $(x - 2)(x + 2 + i)$

C. $(x + 2)(x^2 - 4x + 5)$

D. $(x - 2)(x^2 - 4x + 5)$

E. $(x + 2)(x^2 + 5)$

5. Find all zeros of $f(x) = x^3 + 7x - 22$ and write a linear factorization of $f(x)$.

5. Zeros: _____

$f(x) =$ _____

6. What is the minimum value for the function $y = 3x^2 - 60x + 194$?

6. _____

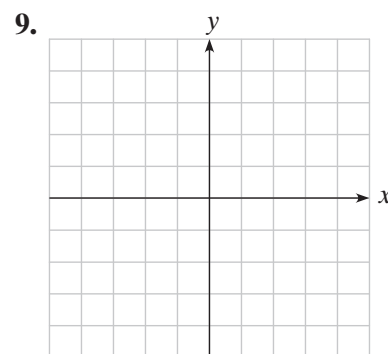
7. The line $x = 3$ is the axis of symmetry for the graph of a parabola. If the parabola contains the points $(5, -3)$ and $(-1, 9)$, what is the equation for the parabola?

7. _____

8. A swimming pool is 8 ft longer than it is wide. The pool is surrounded by a walkway of width 4 ft. The combined area of the pool and the walkway is 1280 ft^2 . Find the dimensions of the pool without the walkway.

8. _____

9. Graph the function $y = -3x^4 + 2x^3 + 6x^2 - 5x + 1$. Choose a viewing window that shows three local extremum values and all the x -intercepts. Make a sketch of the grapher window, and show the viewing window dimensions.



FORM B

2

Chapter Test (continued)

NAME _____

10. Describe the end behavior of the polynomial function $f(x) = -3x^5 + 2x^4 + 5x - 3$.
11. Identify the horizontal and vertical asymptotes for the function $f(x) = \frac{5x^2}{2x^2 - 11x + 12}$.
12. Solve the inequality $(x - 4)\sqrt{x + 2} \geq 0$.
13. Jennifer's distance D from a motion detector is given by the data below. Find a cubic regression equation (with coefficients expressed to the nearest thousandth), and graph it together with a scatter plot of the data.
14. In the space below, identify all asymptotes and intercepts of the function $g(x) = \frac{x + 6}{x^2 + x - 12}$. Sketch a graph of $g(x)$.
15. Tell how the graph of $y = 5 + \frac{2}{x - 4}$ can be obtained from the graph of $y = \frac{1}{x}$ by using transformations.
16. Solve the inequality $\frac{(x - 4)^3}{x(x + 3)} \leq 0$.
10. $f(x) \rightarrow$ _____ as $x \rightarrow -\infty$;
 $f(x) \rightarrow$ _____ as $x \rightarrow \infty$
11. Horizontal: _____
Vertical: _____
12. _____
13. _____
14. _____
15. _____

16. _____

$t(\text{sec})$	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
$D(m)$	2.2	1.1	0.7	1.0	1.7	2.5	3.3	4.0	4.4	3.8	2.8

