

CHAPTER 2 PRACTICE EXERCISES (*OPTIONAL)

2-01 GRAPH QUADRATIC FUNCTIONS IN STANDARD FORM

50 #1, 5, 13, 25, 27, 29, 30, and 59 #1, 3, 5, 9, 11, and 76 #1, 3, 5, and Mixed Review = 20

Mixed Review

- (1-07) Find the inverse of $\begin{bmatrix} 3 & 1 \\ 1 & 4 \end{bmatrix}$.
- (1-07) Use an inverse matrix to solve the system $\begin{cases} 3x + y = -3 \\ x + 4y = 10 \end{cases}$.
- (1-06) Find the determinant of $\begin{bmatrix} 3 & 1 & 1 \\ 1 & 4 & 1 \\ 1 & 0 & 1 \end{bmatrix}$.
- (1-01) Solve the system by **graphing** $\begin{cases} y = -3x + 6 \\ y = 0 \end{cases}$.
- (0-06) Describe the transformations of $y = -\frac{1}{2}|x + 2| - 1$.

2-02 GRAPH QUADRATIC FUNCTIONS IN GENERAL AND INTERCEPT FORM

59 #17, 19, 21, 23, 29, 45, 47, 49, 50, 65, and 76 #7, 9, 11, 15, 17, and Mixed Review = 20

Mixed Review

- (2-01) What is the vertex of $y = \frac{3}{2}(x + \frac{1}{2})^2 - \frac{5}{2}$?
- (2-01) Write a function what is a transformation of $y = x^2$ where it is shrunk vertically by a factor of $\frac{2}{5}$ and is translated 2 right and 3 down.
- (1-07) Find the inverse of $\begin{bmatrix} 2 & 0 \\ 0 & -1 \end{bmatrix}$.
- (1-05) Simplify $\begin{bmatrix} 2 & -3 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 0 & -2 \end{bmatrix}$.
- (0-01) Solve for x . $3x - 4y = 12$.

2-03 GRAPH QUADRATIC INEQUALITIES

140 #1, 5, 7, 11, 15, 17, 19, 21, 25, 50, Mixed Review = 15

Mixed Review

- (2-02) Find the axis of symmetry of $y = 2x^2 + 3x + 1$.
- (2-02) Find the minimum value of $y = 2x^2 + 3x + 1$.
- (2-01) Find the vertex of $y = 3(x - 20)^2 + 50$.
- (1-05) Multiply $\begin{bmatrix} 2 & 3 & 4 \\ 1 & -1 & 0 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \\ -3 \end{bmatrix}$.
- (0-07) Graph $y \leq 2x + 2$.

2-04 GRAPH POLYNOMIAL FUNCTIONS

158 #1, 3, 7, 19, 21, 23, 25, 29, 31, 210 #1, 3, 7, 23, 25, 27, Mixed Review = 20

Mixed Review

- (2-03) Graph $\begin{cases} y \geq x^2 - 4 \\ y \leq x + 2 \end{cases}$.
- (2-03) In the graph of $y < x^2 + 5x - 4$, should you shade above the parabola or below?
- (2-02) What is the axis of symmetry of $y = 2x^2 - 3x + 5$?
- (2-01) How is the graph of $y = -x^2 - 5$ transformed from $y = x^2$?
- (1-06) Find the area of the triangle with vertices (2, 1), (4, 3), (-1, 0).

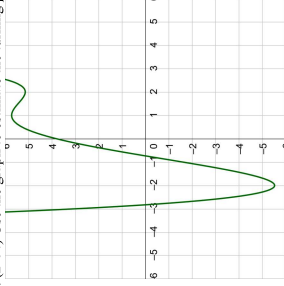
2-05 WRITE QUADRATIC AND POLYNOMIAL MODELS

217 #1, 3, 5, 7, 9, 11, 13, 14, 17, 19, Mixed Review = 15

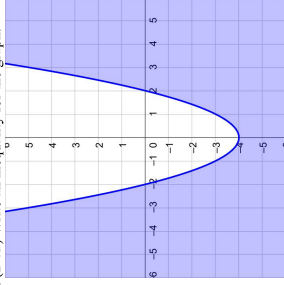
Mixed Review

- (2-04) Graph $y = (x - 3)(x - 1)(x + 1)$ and identify the x -intercepts.

- (2-04) Use the graph to estimate the turning points.



- (2-03) Write an inequality for the graph.



- (2-02) Find the quadratic model with x -intercepts 3 and 5 and passes through (4, 3).
- (2-01) Find the quadratic model with vertex (2, -5) and passes through (0, 3).

2-REVIEW

Take this test as you would take a test in class. When you are finished, check your work against the answers.

2-01

Describe the transformations of the graph.

- $f(x) = (x - 3)^2 + 5$
- $f(x) = -2x^2$

Graph.

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

Write a quadratic function with the given vertex.

- Vertex: (2, -3); Passes through (0, 9)

2-02

Identify the vertex.

- $y = 2(x - 1)(x + 3)$
- $y = x^2 + 4x - 5$

Graph.

- $y = \frac{1}{2}x^2 + x - 2$

Write a quadratic function with the given x -intercepts.

- x -intercepts: (3, 0) and (7, 0); Passes through (4, 3)

2-03

(a) Is the line of the graph solid or dashed? (b) Is the graph shaded above or below the parabola?

- $y \geq -2(x - 4)(x + 1)$

- $y < x^2 - 5$

Graph.

- $y > x^2 + 2x + 1$
- $\begin{cases} y > \frac{1}{2}(x - 1)^2 - 4 \\ y < -x^2 + 4 \end{cases}$

2-04

Describe the end behavior of the graph.

- $y = -7x^4 + 2x^2 - 15$

- $y = 2 + 3x + 5x^3$

(a) Graph the function, (b) estimate the turning points, and (c) estimate the x -intercepts.

- $y = \frac{1}{2}x^3 - \frac{1}{2}x^2 - x + 2$

- $y = 0.1x^4 - 1.8x^2 + 4$

2-05

Write a polynomial function with the given x -intercepts.

- x -intercepts: (2, 0), (1, 0), (-4, 0); passes through: (0, 5)

- x -intercepts: (-1, 0), (0, 0), (4, 0); passes through: (1, 2)

Use finite differences to find the degree of the function passing through the given points.

x	0	1	2	3	4	5	6	7
y	1	-1	-1	1	5	11	19	29

x	0	1	2	3	4	5	6	7
y	0	-2	-10	-30	-68	-130	-222	-350

20

ANSWERS

2-01

- $\left[\frac{1}{4}, -\frac{1}{11} \right]$
- Reflection over x-axis, vertical shrink by factor $\frac{1}{5}$, translate left 2 and down 1

3, 8

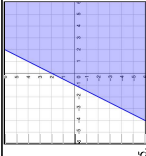
4, (2, 0)

5, Reflection over x-axis, vertical shrink by factor $\frac{1}{5}$, translate left 2 and down 1

2-02

- $\left(-\frac{1}{3}, -\frac{4}{3} \right)$
- $y = \frac{1}{3}(x-2)^2 - 3$
- $\begin{bmatrix} \frac{1}{2} & 0 \\ 0 & -1 \end{bmatrix}$
- $\begin{bmatrix} 6 & 8 \\ 3 & 3 \end{bmatrix}$
- $x = \frac{4}{3}y + 4$

2-03



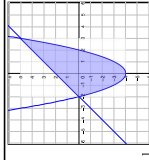
1, $x = -\frac{1}{2}$

2, $y = -\frac{1}{4}$

3, (20, 50)

4, $\begin{bmatrix} -5 \\ 1 \end{bmatrix}$

2-04



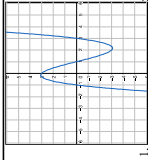
2, Below

3, $x = \frac{1}{2}$

4, Reflected over the y-axis and translated down 5 units

5, 2

2-05



2, Minimums: (-2, -5.5) and (2, 5.1); Maximum: (1, 5.7)

3, $y \leq x^2 - 4$

4, $y = -3(x-3)(x-5)$

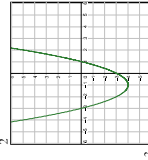
5, $y = 2(x-2)^2 - 5$

(-1, 0), (1, 0), (3, 0)

2-REVIEW

1, Translated 3 right and 5 up

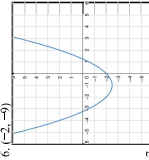
2, Reflected over x-axis and vertical stretch by factor of 2



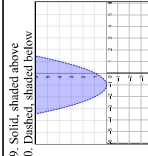
3, $y = 3(x-2)^2 - 3$

5, $\begin{pmatrix} -1 \\ -8 \end{pmatrix}$

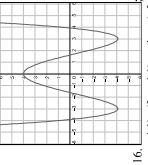
6, $\begin{pmatrix} -2 \\ -9 \end{pmatrix}$



7, $y = -(x-3)(x-7)$



15, (1.2, 0.9), x-inter: (-4, 6), 0)



16, Max: (0, 4), Min: (-3, -3.9, 0)

17, $y = \frac{1}{2}(x-2)(x-1)(x+4)$

18, $y = -\frac{1}{3}(x+1)(x)(x-4)$

19, 2

20, 3