Algebra 2

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.

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

Graph.

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

Write a quadratic function with the given vertex.

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

2-02

Identify the vertex.

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

Graph.

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

Write a quadratic function with the given *x*-intercepts.

8. *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?

9. $y \geq -2(x-4)(x+1)$
10. $y < x^2 - 5$

Graph.

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

2-04

Describe the end behavior of the graph.

13. $y = -7x^4 + 2x^2 - 15$
14. $y = 2 + 3x + 5x^3$

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

15. $y = \frac{1}{2}x^3 - \frac{1}{2}x^2 - x + 2$
16. $y = 0.1x^4 - 1.8x^2 + 4$

2-05

Write a polynomial function with the given x-intercepts.

17. *x*-intercepts: $(2, 0)$, $(1, 0)$, $(-4, 0)$; passes through: $(0, 5)$
18. *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.

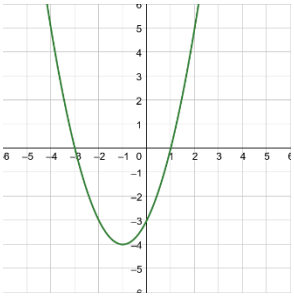
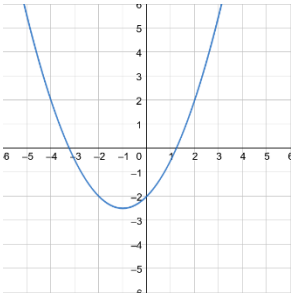
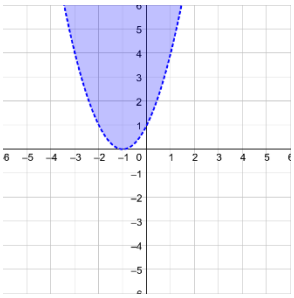
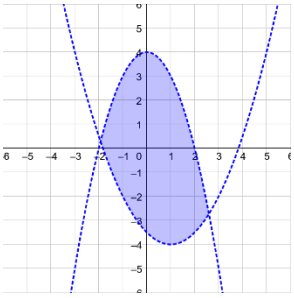
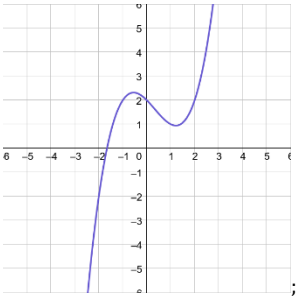
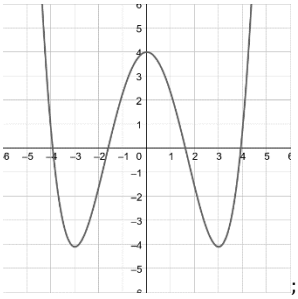
19.

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

20.

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

Answers

1. Translated 3 right and 5 up
2. Reflected over x-axis and vertical stretch by factor of 2
3. 
4. $y = 3(x-2)^2 - 3$
5. $(-1, -8)$
6. $(-2, -9)$
7. 
8. $y = -(x-3)(x-7)$
9. Solid, shaded above
10. Dashed, shaded below
11. 
12. 
13. Falls to the left, falls to the right
14. Falls to the left, rises to the right
15.  ; Max: $(-0.5, 2.3)$, Min: $(1.2, 0.9)$; x-int: $(-1.6, 0)$
16.  ; Max: $(0, 4)$, Min: $(-3, -4.1)$, $(3, -4.1)$; x-int: $(-3.9, 0)$, $(-1.6, 0)$, $(1.6, 0)$, $(3.9, 0)$
17. $y = \frac{5}{8}(x-2)(x-1)(x+4)$
18. $y = -\frac{1}{3}(x+1)(x)(x-4)$
19. 2
20. 3