Algebra 2

2-Extra Practice

2-01

Describe the transformations of the graph.

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

Graph.

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

Write a quadratic function with the given vertex.

4. Vertex: (1, −2); Passes through (2, 0)

2-02

Identify the vertex.

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

Graph.

7. $y = 2x^2 + 2x - 1$

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

8. *x*-intercepts: (−2, 0) and (2, 0); Passes through (0, −4)

2-03

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

9. $y < 4(x - 5)(x - 1)$
10. $y \geq 15(x + 1)^2 - 25$

Graph.

11. $y < -x^2 + 4$
12. $\begin{cases} y > (x - 2)^2 - 5 \\ y < -x^2 + x + 4 \end{cases}$

2-04

Describe the end behavior of the graph.

13. $y = 17x^5 + 12x^3 - 1008$
14. $y = 12 + 213x^2 - 125x^4$

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

15. $y = \frac{1}{4}x^4 - \frac{5}{2}x^2 + \frac{9}{4}$
16. $y = x^3 - 4x$

2-05

Write a polynomial function with the given x-intercepts.

17. *x*-intercepts: (3, 0), (2, 0), (−1, 0); passes through: (0, 6)
18. *x*-intercepts: (−3, 0), (0, 0), (3, 0); passes through: (2, −5)

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

19.

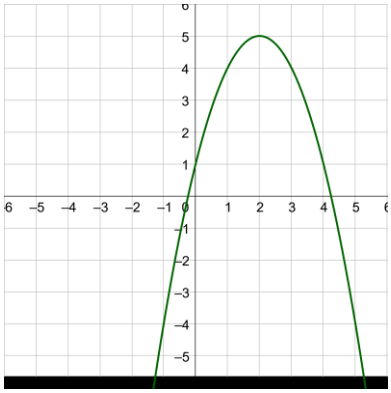
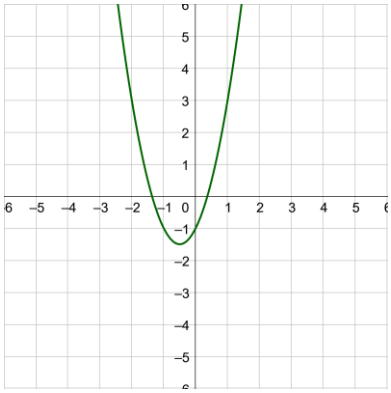
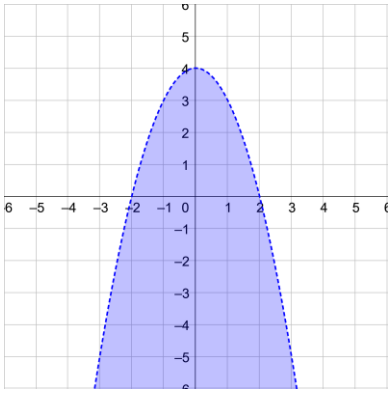
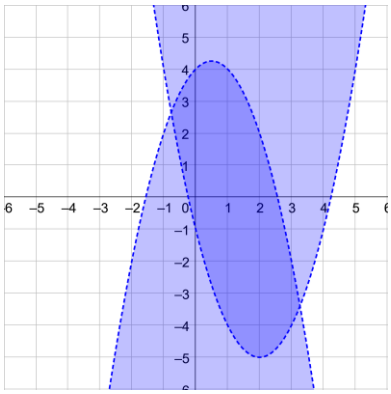
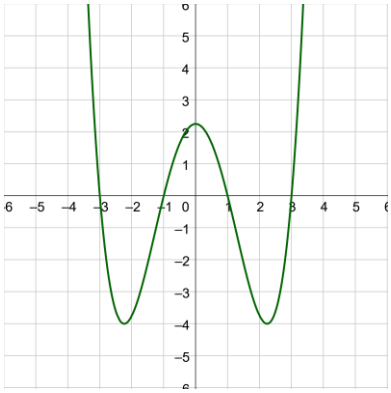
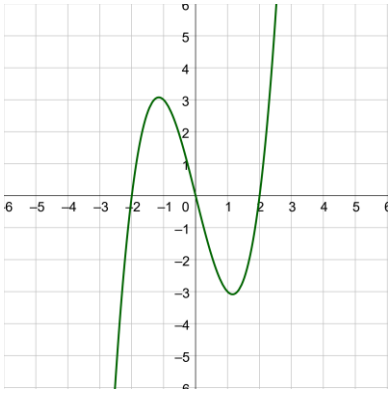
x	0	1	2	3	4	5	6	7
y	−4	−2	0	2	4	6	8	10

20.

x	0	1	2	3	4	5	6	7
y	0	0	4	18	48	100	180	294

Name: _____

Answers

1. Vertical stretch by factor of 2, shift down 1
2. Reflect over the x-axis, shift left 3
3. 
4. $y = 2(x-1)^2 - 2$
5. $(-1, -27)$
6. $\left(-\frac{1}{2}, -\frac{3}{2}\right)$
7. 
8. $y = (x+2)(x-2)$
9. Dashed; below
10. Solid; above
11. 
12. 
13. Falls left, rises right
14. Falls left, falls right
15. 
    Min: $(-2.24, -4)$, $(2.24, -4)$;
    Max: $(0, 2.25)$; x-int: $-3, -1, 1, 3$
16. 
    Min: $(1.15, -3.08)$; Max: $(-1.15, 3.08)$;
    x-int: $-2, 0, 2$
17. $y = (x-3)(x-2)(x+1)$
18. $y = \frac{1}{2}x(x+3)(x-3)$
19. 1
20. 3