Name: _____ Date: _____

Chapter 4 Review

1. Use finite differences to determine whether each relation is linear, quadratic, or neither.

a)

x	*y*
1	3
2	10
3	29
4	66
5	127

b)

x	*y*
–2	12
–1	3
0	0
1	3
2	12

c)

x	*y*
1	5
3	13
5	21
7	29
9	37

2. Sketch the graph of each parabola and describe its transformations from the relation $y = x^2$.

a) $y = (x + 3)^2$ **b)** $y = x^2 + 2$

c) $y = \frac{1}{3}x^2$ **d)** $y = -3x^2$

3. Write an equation for the parabola that satisfies each set of conditions.

a) vertex (3, 4), opening downward with a vertical stretch by a factor of 3

b) vertex (–1, 2), opening upward with a vertical compression by a factor of $\frac{1}{2}$

c) vertex (–2, –4), opening downward with no vertical stretch

4. Copy and complete the table for each parabola. Replace the heading for the second column with the equation for the parabola.

a) $y = (x + 2)^2 + 3$

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

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

d) $y = -(x - 3)^2 - 4$

Property	$y = a(x - h)^2 + k$
vertex	
axis of symmetry	
stretch or compression	
direction of opening	
values that *x* may take	
values that *y* may take	

5. Sketch each parabola in question 6.

6. A store can increase revenue by increasing the price of its T-shirts. The revenue, *R*, in dollars, can be modelled by the relation $R = -50(d - 3.5)^2 + 4000$, where *d* represents the dollar increase in price.

a) Graph the relation for $0 \le d \le 10$.

b) What is the maximum revenue?

c) What dollar increase corresponds to the maximum revenue?

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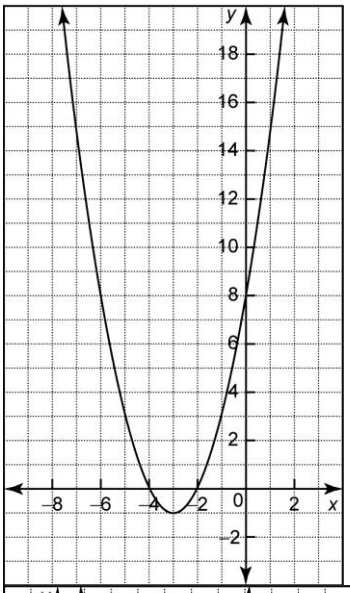
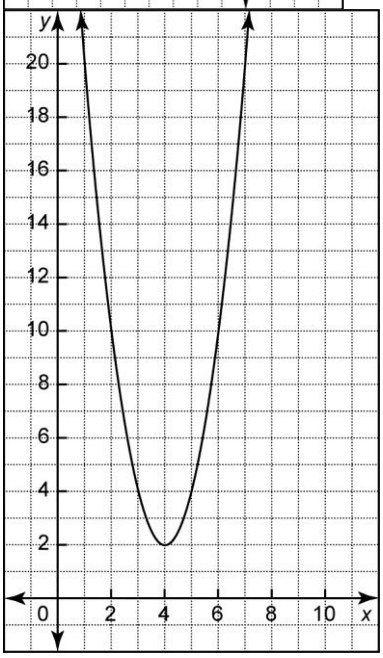
7. Write an equation for each parabola.

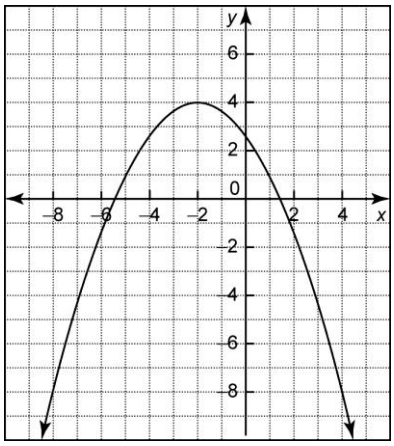
a)



b)



c)



8. Find an equation for the parabola with vertex (–3, 1) that passes through the point (–2, –1).

9. Find an equation for the parabola with vertex (4, 3) that passes through the point (10, –9).