Part 1: Multiple Choice

Find the discriminant of each quadratic equation then state the number and type of solutions.

1) $7x^2 - 9x = 0$

A) 81; two real solutions
B) 121; two real solutions
C) 296; two real solutions
D) 81; one real solution

2) $6n^2 + 8n + 3 = 0$

A) −87; two imaginary solutions
B) −8; two imaginary solutions
C) −8; two real solutions
D) 84; two real solutions

3) $2x^2 + 8x + 8 = 0$

A) 0; two imaginary solutions
B) 0; one real solution
C) 65; two real solutions
D) 0; two real solutions

4) $-5x^2 - 10x - 5 = 0$

A) −175; two imaginary solutions
B) 200; two real solutions
C) 0; one real solution
D) 0; two imaginary solutions

5) f(x) = x^2 and g(x) i= $(x + 4)^2$, then g(x) is f(x) shifted

A) up 4
B) right 4
C) left 4
D) down 4

6) f(x) = x^2 and g(x) is $5x^2$, then g(x) is f(x) with a

A) none of these
B) different vertex
C) vertical stretch
D) vertical compression

7) f(x) = x^2 and g(x) is $x^2 + 4$, then is f(x) shifted

A) left 4
B) down 4
C) right 4
D) up 4

8) f(x) = x^2 and g(x) is $(1/2)x^2$, then g(x) is f(x) with a

A) vertical compression
B) none of these
C) different vertex
D) vertical stretch

Part 2: Free Response (Write your answers on your paper)

Fill in the blanks.

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

x intercept(s) _____

axis of symmetry_____

10) $f(x) = 2x^2 - 12x + 16$

x intercept(s) _____

axis of symmetry_____

State the vertex of each function, and the value of a, and which way the parabola opens (up or down).

11) $y = (x + 4)^2 + 1$

Vertex _____

Value of a _____

Opens _____

12) $y = (x - 3)^2 + 2$

Vertex _____

Value of a _____

Opens _____

13) $y = 2x^2 + 16x + 34$

Vertex _____

Value of a _____

Opens _____

14) $y = -x^2 - 2x - 4$

Vertex _____

Value of a _____

Opens _____

15) A golf ball is thrown off of the roof of a building. It's height *h(t)* after *t* seconds is modeled by the function $h(t) = -5t^2 + 4t + 18$
What is the initial height of the golf ball?

16) A girl throws a football in the air. It's height *h(t)* after *t* seconds is modeled by the function $h(t) = -x^2 + x + 5$
After how many seconds does the ball hit the ground?

17) The profit of a restaurant depends on how much they charge for each meal. Their profit is modeled by the function $p(m) = -7x^2 + 500x - 1000$ in which *m* represents the price of a meal. What meal price will result in maximum profit?