Linear and Quadratic Systems Problems

1. Which of the following represents all solutions (x,y) to the system of equations shown below? *(no calculator)*

$$y=2x-3$$
$$y=x^2-4x+6$$

a. $(-3,-3)$
b. $(-3,-9)$
c. $(-3,-3)$ and $(-3,-9)$
d. $(-3,-3)$ and $(3,3)$

2. Which of the following represents all solutions (x,y) to the system of equations shown below? *(no calculator)*

$$y-x=5$$
$$y=x^2-3x-7$$

a. $(-2,3)$
b. $(6,11)$
c. $(2,-3)$ and $(6,11)$
d. $(-2,3)$ and $(6,11)$

3. If (a,b) is a solution to the system of equations shown below and $a>0$, what is the value of a? *(no calculator)*

$$-16x^2=(y+4)(y-4)$$
$$3y=9x$$

a. $\frac{5}{4}$
b. $\frac{1}{2}$
c. $\frac{4}{5}$
d. $\frac{3}{4}$

4. How many solutions are there to the system of equations below? *(no calculator)*

$$y=x^2-5x+23$$
$$y-7x+13=0$$

a. There are no solutions
b. There is exactly 1 solution
c. There are exactly 2 solutions
d. There are exactly 4 solutions

5. If (x,y) is a solution to the system of equations below, what is the value of x^2? *(no calculator)*

$$9x^2+2y^2=136$$
$$y=-2x$$

a. $2\sqrt{2}$
b. 8
c. -16
d. 256

6. If (x,y) is a solution to the system of equations shown below and $x>0$, what is the value of x? *(no calculator)*

$$y=4-4x$$
$$y=8x^2$$

a. 0.375
b. 0.500
c. 0.625
d. 0.750

7. If (x,y) is a solution to the system of equations shown below and $x>0$, what is the value of x? *(no calculator)*

$$y=(x-6)^2+1$$
$$\frac{y-2}{6}=8$$

a. 1
b. 6
c. 7
d. 13

8. If (a,b) is a solution to the system of equations shown below, what is the value of b? *(no calculator)*

$$y = 5x - 25$$
$$y = x^2 - 17x + 96$$

a. 5
b. 11
c. 30
d. 52

9. If (x_1, y_1) and (x_2, y_2) are distinct solutions to the system of equations shown below, what is the product of y_1 and y_2?

$$6y^2 = 25x - 125$$
$$y = \frac{5 - x}{3}$$

a. –37.5
b. 0
c. 12.5
d. 37.5

10. The system of equations above is graphed in the xy-plane. Which of the following is the y-coordinate of an intersection point (x, y) of the graphs of the two equations?

$$y = x^2 - x - 8$$
$$y + 3x = 7$$

a. –4
b. –2
c. 2
d. 4