Alg 2A Review Sec 2-4, 5-1 to 5-4 Spring 2017

For 1 to 6 do the following four parts for each. You won't be able to use a graphing calculator on the quiz to do the graphing.

a) Find the equation of the Line of Symmetry
b) Find the coordinates of the vertex.
c) Find the y-intercept.
d) Graph the parabola using at least5 points.

use graph paper!

1. $y = 3x^2 - 8$

2. $y = x^2 + 2x - 8$

3. $y = -2x^2 - 12x - 10$

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

5. $y = -\frac{1}{2}(x+4)^2 + 5$

6. $y = 2(x+2)^2$

7. The following function models the additional expenses to a company when they hire employees. Where x represents the number of additional employee hires.
$E(x) = 45x^2 - 360x + 4124$

a) Find the number of additional employees to be hired that would minimize the company's expenses.

b) Find the minimum additional expenses.

8. For each quadratic determine if it opens up or down.
a) $y = -48x^2 + x + 89$ b) $y = 0.75x^2 + 3x - 15$

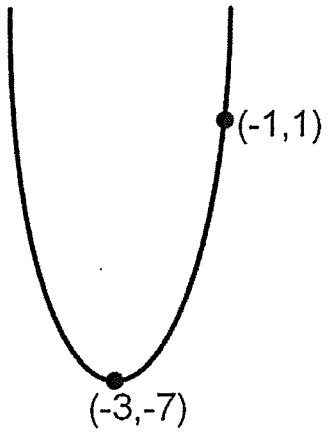
9. For each quadratic determine if the vetex is a minimum or a maximum.
a) $y = 9x^2 - 7x - 1$ b) $y = -x^2 + 3x - 2$ c) $0.015x^2 - 9x - 23$

10. An object is shot into the air with an initial velocity of 160ft/sec from the top of a 20 foot tall building. The following equation models the height of the object as a funciton of time.
$h(t) = -16t^2 + 160t + 20$

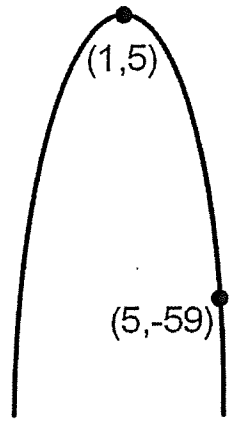
a) Find the maximum height of the object. b) Find the time it takes the object to reach this height.

11. Write the equation of each parabola in Vertex Form: $y = a(x-h)^2 + k$
a) The parabola has a vertex at $(13,-5)$ and passes through the point $(7,-22)$.

b)



c)



Save these for when we return from break

12. Make a scatter plot on the graphing calculator, sketch the scatter plot, then find either a linear or quadratic regression equation to model the data. Round to the nearest hundredth. Then answer the question.

a) The data below relates the speed of a vehicle and the distance it takes to come to a stop.

Speed mph	30	40	50	60	70
Stopping Distance ft	25	55	105	188	300

Find the regression equation that best fits the data then find the stopping distance if a car is traveling 90mph.

b) The data below relates the age of a species of snake with its length.

Age (yrs)	1	2	5	7	8
Length (cm)	39.7	67	148.6	202.3	227.5

Find the regression equation that best fits the data then find the age of a snake if it is 350 cm long.

Factor each completely.

13. $m^2 - 15m + 54$ 14. $w^2 + 20w + 96$ 15. $5c^2 - 40c + 35$

16. $7r^3 + 63r^2 + 98r$ 17. $v^2 + 2v - 48$ 18. $q^2 - 8q - 48$

19. $2n^2 - 2n - 40$ 20. $11x^2 - 14x + 3$ 21. $12x^2 - 80x - 28$

22. $8y^2 + 18y + 9$ 23. $6z^2 + 7z - 10$ 24. $m^2 - 225$

25. $66h^2 - 216$ 26. $27a^2 - 192$ 27. $8c^5 + 28c^3$ 28. $54a^4b^2 - 30ab^4$