

Chapter 9 Exam

1. Could you solve quadratic equations using symbolic methods? I bet you can!

Solve the following quadratic equation for x : $(x + 2)^2 - 3 = 22$

2. Could you find the x -intercepts (roots) of a quadratic equation? Show me, please.

Find the roots of $y = (x + 1)^2 - 16$ and name the roots as an ordered pair.

3. Can you find the vertex of a quadratic from knowing the equation in factored form? I'll be your bff if you can.

Find the vertex of $y = (x + 9)(x + 5)$.

4. You should be able to recognize and write the three different forms of quadratic equations. Write the name of the form next to each equation with your best handwriting.

a. $y = x^2 - 4x - 1$

b. $y = (x - 4)(x + 1)$

c. $y = (x - 4)^2 - 1$

5. Can you change a quadratic equation from vertex form to general form? Prove it, punk, by writing the following in general (standard) form: $y = (x + 5)^2 - 4$.

6. Can you square and multiply binomials. If so, do the following:

a. $(x + 3)^2$

b. $(x + 5)(x - 6)$

7. Can you factor binomials? If you can't, your future Geometry and Algebra 2 teachers will be disappointed. Write the following in factored form:

a. $y = x^2 - 9x + 20$

b. $y = x^2 + 5x + 4$

8. Can you find the roots of a quadratic equation by looking at its factored form? Well, you should, quite easily. Write the roots (x -intercepts) of $y = (x + 2)(x - 8)$

9. Can you find the roots of a quadratic equation in standard form by changing the quadratic equation to factored form first? It's a little bit harder, but just as satisfying. Write the roots (x -intercepts) of $y = x^2 + 9x + 14$

10. Can you find the number of real roots of a quadratic equation by finding its determinant?

Find how many real roots there the quadratic equation $y = x^2 + 6x + 9$ has. Simple, huh?

11. Can you find the *exact* values of the roots by using the quadratic formula? Make my day – find the roots of $y = x^2 + 5x + 7$.

12. Given $y = x^2 + 6x - 16$, you should be able to do *all* the following. Here's your chance to shine.

- a. write its y -intercept,
- b. change it to factored form,
- c. write its roots,
- d. find its vertex,
- e. write the equation in vertex form,
- f. sketch the parabola using its y -intercept, x -intercepts (roots), and its vertex.

When you sketch the parabola, label each point above as an ordered pair: (x, y)