Math 80 Spring 2019 Test 3 Practice Test Name:

Please silence your cell phone.

You must show your steps. If you're unsure whether you have enough work, please ask.

Helpful information

$x_{\text{coor}} = \frac{-b}{2a}$ Given $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. Factor $16yx^3 - 2y$ using the GCF and then the difference of two cubes.

2. Factor $a^3 + a^2b - 4ab^2 - 4b^3$ using grouping and then the difference of two squares.

3. Factor $12x^2 + 19x + 4$ using the method of your choice.

4. Factor $m^4 - m^3 + 27n^3m - 27n^3$ using grouping and then the sum of two cubes.

5. Solve each of the following using the zero-product method.

a) $x(2x-3)(x+5)=0$

b) $4x^2+10=13x$

6. Simplify each of the following. You must show your work.

a) $3\sqrt{108}$

b) $4\sqrt{\frac{27}{16}}$

c) $\frac{3\sqrt{5}}{\sqrt{6}}$

8. For each of the following find the value of the discriminant and then circle how many solutions you expect. **Don't** solve the quadratic equation.

a) $x^2-2x+1=0$

2 solutions 1 solution No solutions.

b) $x^2+x+1=0$

2 solutions 1 solution No solutions.

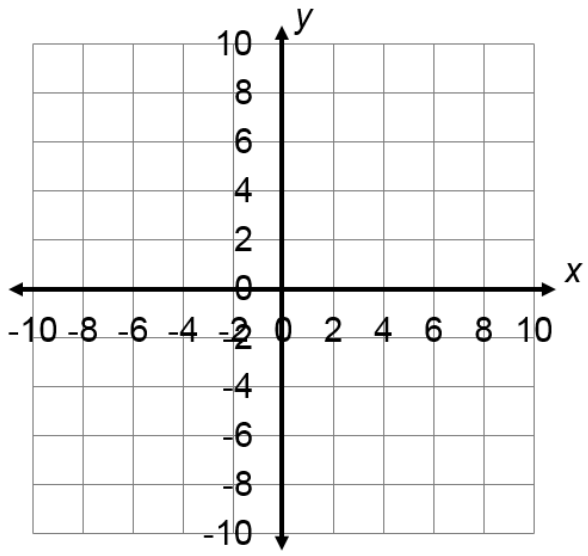
7. Given the parabola $f(x) = -x^2 + 6x - 4$

a) Does the parabola open up or down?

b) Find the *y* – intercept.

c) Find the vertex of the parabola.

d) Graph the parabola.



e) Find the discriminant and discuss what it says about the number of *x* intercepts.

f) **Using the quadratic formula** find any *x*-intercepts. Simplify your answers.

8. The function $W(t) = 10t^2 - 120t + 400$ models the number of people watching a state swim meet. *W* stands for the number of people watching and *t* stands for the number of hours after 8 a.m.

   a. What does $W(0)$ tell us.

   b. How many people were watching the finals at 10 p.m.?

   c. Find the minimum number of people that will be watching and find the time this will occur.

   d. In English, answer the question that $W(t) = 200$ is asking.