Math 118 Test 3 Name_____

1. For the polynomial $-x^3+15x^2-5x+8$ the degree is _____, the leading coefficient is _____, and the constant is _____.

2. Give an example of a polynomial of degree 2 with leading coefficient –2 and constant 3.

3. If you graph your example above, does it open up or down? _____

4. What is the y-intercept of your example? _____

5. Add: $(x^3+4x^2-2x+3)+(2x^3+4x^2-x+1)$

6. Subtract: $(x^3+4x^2-2x+3)-(2x^3+4x^2-x+1)$

7. Multiply: $(2x-6)(x-5)$

8. $(x+10)^2$

9. Divide: $\frac{x^3 + x^2 - 5x - 2}{x - 2}$

10. Factor the perfect square: $x^2 - 8x + 16$

11. Factor the difference of two squares: $x^2 - 49$

12. Factor the difference of two cubes: $x^3 - 1$

Graph $y = -x^2 - 2x + 8$ by using the following steps:

13. $a =$ ___, $b =$ ___, $c =$ ___

14. Does the parabola open up or down? _____

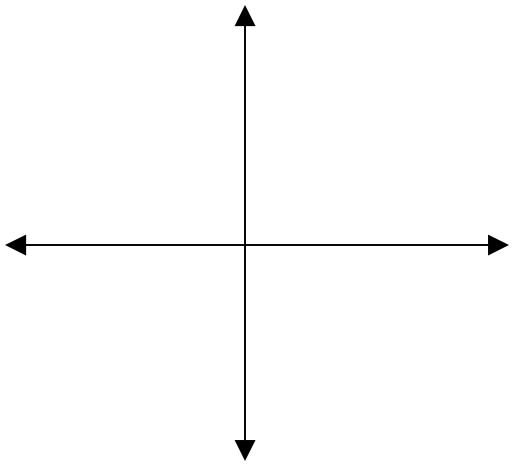
15. How can you easily tell? Because _____

16. The vertex is (___, ___)

17. The y-intercept, i.e. the point where the graph crosses the y-axis is (___, ___)

18. The x-intercepts, i.e. the points where the graph crosses the x-axis are (___, ___) and (___, ___)

19. Plot the points in questions 16,17 and 18 above, and graph the parabola.



Evaluate the numbers:

20. $64^{\frac{1}{2}}$ =_____, $-16^{\frac{3}{2}}$=_____, $\sqrt[3]{8}$ =_____, $\sqrt{\frac{16}{25}}$ =_____, $\sqrt{3^2+4^2}$

Write in simplest radical form:

21. $\sqrt{8x^3y^4}$

22. $\sqrt{\frac{1}{2}}$

23. $\dfrac{5}{2-\sqrt{3}}$

Solve for x:

24. $x^2 = 81$

25. $\left(x+\frac{1}{2}\right)^2 = \dfrac{3}{4}$

26. $x^2 + 4x + 2 = 0$

27. $x^2 + 6x = -9$

28. $2x^2 - 10x + 6 = 0$