This is a list of sample problems from the tests. Questions similar to these will be on the Final Exam.

Math 118 Practice test 1:

1. Give an example of an irrational number_____, a rational number _____, and integer_____, a natural number.
2. True or false: .121212… is a rational number.
3. True or false: Every real number is rational.
4. True or false: Every integer is rational.

Use the distributive property to multiply, then collect like terms:

5. $3(2x+7)-4x+5$
6. $\frac{1}{2}(2x-12y)+y-x$

7. $2\times137\times10=137\times2\times10$ is an example of the _____ law of multiplication.
8. $50+50\times.07=50\times1.07$ is an example of the _____ law.
9. $12\times(3x)=(12\times3)x$ is an example of the _____ law of multiplication.

Evaluate:

10. $\frac{(8-3)-(1-2)}{4-(-2)}$
11. $8-\left[(4-7)+(8-1)\right]$
12. -10^2
13. -10^0
14. $(-10)^2$
15. $(-10)^0$
16. 10^{-3}
17. $2^{-1}+3^{-1}$
18. $\left(\frac{2}{3}\right)^{-2}$

Rewrite using positive exponents only:

19. $\left(\frac{2x^2}{x^{-1}}\right)^{-3}$

20. $x^3y^2x^{-2}y^4$

Write in scientific notation:

21. $0.000\,000\,014$

22. $520,000,000,000$

Write in decimal notation:

23. 3.14×10^{-5}

24. 8.12×10^{6}

Solve for x:

25. $3x-4-5x=x+4+x$

26. $.07x+9.95=.03x+13.95$

27. $6x-2(x-3)=4(x+1)+4$

28. $x=\frac{1}{4}+\frac{5}{8}x$

29. Evaluate the expression b^2-4ac for $a=2,b=-1,c=-4$

30. Evaluate the expression $\frac{-b}{2a}$ for $a=2,b=-6$

Solve the inequality. Write your answer as a set, in interval notation, and graph the solution.

31. $x-7\geq-9$

32. $-2x<4$

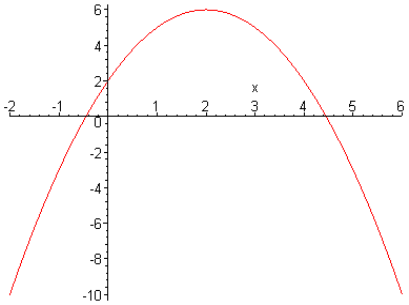
33. $6(2-x)\geq12$

34. $6<2-2x<10$

Math 118 Practice Test 2

Solve for *x*:

1. $|x-2|=7$
2. $|1-2x|<3$
3. A vertical line has slope _____ and a horizontal line has slope _____.
4. The equation of the x-axis is _____ and the equation of the y-axis is _____.
5. The equation for a vertical line through (2,3) is _____ and the equation for the horizontal line through (2,3) is _____.
6. A line perpendicular to a line with slope 2 has slope _____, and a line perpendicular to a line with slope $\frac{2}{3}$ has slope _____
7. The equation for the line with slope –3 and y-intercept 6 is _____
8. Find the equation for the line with slope $\frac{1}{2}$ through the point (-5,4)
9. Find the equation for the line through the points (-1,3) and (3,1).
10. Find the equation for the line through the point (2,5) perpendicular to the line $y=-2x+7$
11. Determine whether the ordered pairs $\left\{\left(-2,\tfrac{1}{4}\right),\left(-1,\tfrac{1}{2}\right),(0,1),(1,2),(2,4)\right\}$ represents a function. (Answer: yes, because no first number is repeated.)
12. What is the domain of the function above?
13. What is the range of the function above?
14. If the function above is called *f*, what is $f(-1)$?
15. Every line determines a function except a _____ line.
16. Let $f(x)=2x-1$ with domain [-3,7]. What is the range of this function?
17. For the function above, what is $f(-4), f(2), f(4)$? (Partial answer: $f(-4)$ doesn't exist because –4 is not in the domain of *f*.
18. The picture represents a function because it passes the _____ test.



19. If the picture represents the function *f*, then the domain of *f* is _____ and the range of *f* is _____.
20. For the picture above, $f(-2)=$ ___, $f(-1)=$ ___, $f(0)=$ ___, $f(2)=$ ___
21. Give an example of a polynomial of degree 3 with leading coefficient 4 and constant –5
22. For the polynomial $-x^3+10x^2-6x+5$ the degree is ____, the leading coefficient is _____ and the constant is _____.
23. If you add a polynomial of degree 4 to a polynomial of degree 3 the degree of the sum will have degree _____

24. If you multiply a polynomial of degree 4 to a polynomial of degree 3 the degree of the product will be ____.
25. Add $(-x^3+10x^2-6x+5)+(x^2-3x+5)$
26. Subtract: $(-x^3+10x^2-6x+5)-(x^2-3x+5)$
27. Multiply: $(-x^3+10x^2-6x+5)(x^2-3x+5)$
28. Multiply: $(x-3)(x+3)$
29. Multiply: $(x+4)^2$
30. Divide: $\dfrac{2x^3-x^2-12x+2}{x-3}$
31. Factor out the greatest common factor: $4x^5-8x^3+4x^2$
32. Factor by grouping: $x^3+3x^2+4x+12$

Math 118 Practice Test 3:

1. For the polynomial $3x^4-5x^2+7x-5$ the degree is _____, the leading coefficient is _____, and the constant is _____.

2. Give an example of a polynomial of degree 2 with leading coefficient –1 and constant 7

3. Rewrite the polynomial $-x^3+x^4-5x+12-7x^2$ in standard form.

4. For the polynomial in number 3, the degree is _____, the leading coefficient is _____ and the constant is _____.
5. Add: $(2x^3-3x^2+5x-7)+(x^3+3x^2-x+5)$
6. Subtract: $(2x^3-3x^2+5x-7)-(x^3+3x^2-x+5)$
7. $(x-3)(2x+4)$
8. $(x-5)(x+5)$
9. $(x-1)^2$
10. $(3x^2+4x-4)(3x+6)$
11. Divide: $\dfrac{x^2+3x+2}{x+2}$
12. Factor: $x^2+10x-24$
13. Factor the perfect square: x^2+6x+9
14. Factor the difference of two squares: x^2-25
15. Factor the difference of two cubes: x^3-8
16. Factor the sum of two cubes: x^3+1
17. Graph $y=x^2+6x+5$ by using the following steps:
18. $a=$ ___, $b=$ ___, $c=$ ___

19. Does the parabola open up or down? _____

20. How can you easily tell? Because _____

21. The vertex is (___, ___)

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

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

and (___, ___)

24. Plot the points above, and graph the parabola.

25. If the vertex of a parabola is lies above the x-axis and the parabola opens downward, how many x-intercepts will it have? _____

26. Evaluate the numbers: $49^{\frac{1}{2}}$ $-16^{\frac{1}{2}}$ $\sqrt[3]{27}$ $\sqrt{\frac{4}{9}}$ $\sqrt{\frac{8}{81}}$

27. Write in simplest radical form: $\sqrt[3]{8x^6}$ $\sqrt{8x^5}$ $\frac{2}{\sqrt{5}}$ $\sqrt{5^2+12^2}$ $\frac{4-\sqrt{8}}{2}$

$\frac{2}{3-\sqrt{5}}$

28. Solve for x: $x^2 = 5$

29. $(x-2)^2 = 8$

30. $\left(x-\frac{2}{3}\right)^2 = \frac{5}{9}$

31. $4x^2+4x+1=0$

32. $x^2-3x-1=0$

33. $x^2-2x=-1$

34. $2x^2+6x-10=0$