College Algebra Final Exam Review

Page one of the final usually has several equations to solve like this:

Linear equation: $-3(x-1)+2x=7(x-6)-3$

Problem that can be solved by factoring: $x^2-5x+6=0$.

Problem that can be solved by setting equal to zero and using the quadratic formula: $2x^2-3=-5x$

Two fractions:

$$\frac{x}{2+x}=\frac{x+6}{x+4}$$

Problem that can be solved by taking the positive and negative square root: $(3x-5)^2=24$

Square root equation that can be solved by isolating the square root and squaring both sides: $\sqrt{3x+2}-5=0$ (Note that you MUST check your answers.)

Absolute value equation that can be solved by isolating the absolute value. If the other side is negative, then there are no solutions. But otherwise, you set the inside of it equal to the other side and the opposite of the other side and solve both problems. $|7x-5|-4=11$ or $|4x-2|+11=3$.

Logarithmic equation. Multiply the insides if the logs are added and divide them if they are subtracted. $\log_3(x+2)+\log_3(x)=1$

Page two and following usually have some random types of problems like number lines, variation problems, systems of equations, investments, etc.

Solve and graph the solution on a number line.

$$-1\le -\frac{2x}{3}+5<11$$

Solve the system of equations. $3x-5y=-7$ $2x+3y=8$

Weight w varies inversely as the distance squared. If the weight is 400 when the distance is 10, what is the weight when the distance is 20?

You invest $17,000 at 1.23% interest compounded continuously. How much will you have in 5 years? (Give the answer to the nearest cent. If you have no calculator, give the formula that you'd use to find the answer.) (Some formulas: $A=P(1+r/n)^{nt}$ and $P(t)=P_0e^{kt}$.)

Find the equation of the line that passes through the points (-7, -4) and (-1, 4).

Find the x and y intercepts of the line $4x+5y=20$. Then graph the line.

Graph a line that goes through the point (-3, 4) and has a slope of $-\frac{3}{5}$.

Find the center and radius of the circle: $(x+7)^2+(y-3)^2=25$.

Find the vertex, axis of symmetry, and y intercept of $f(x)=5(x+3)^2-6$.

Solve. $y^4-5y^2+4=0$.

Perform the indicated operation using complex numbers and simplify. $(11+5i)-(7-3i)$ Note that this is just subtraction and NOT multiplication.

Perform the indicated operation using complex numbers and simplify.

$$\frac{2-3i}{4-5i}$$

Find $f(4-y)$

$$f(x) = \frac{x-3}{2x-5}$$

Find $(f \circ g)(2)$

$$f(x) = \frac{2x-3}{x-1} \text{ and } g(x) = 3x-1.$$

Find $f^{-1}(x)$ if $f(x) = 3x - 5$.
Find the exact value of $\log_{12} 8 + \log_{12} 18$ or $\log_6 72 - \log_6 2$.
Find the exact value of the logarithm $\ln(e^{5.73})$ or $\log 10^{100000.5}$.
Given that -3 is a zero, find all the zeros of the function $f(x) = 2x^3 - 14x + 12$.
Find all the zeros (same as the roots) $x^3 + x^2 - 20x$.
Graph $f(x) = -8(x+5)(x-3)(x+1)^2$.
Graph the inequality $y < -2x + 4$.
Find the sum.

$$\sum_{k=0}^{4}(3k-5)$$

Other problems that would be good to study.
Solve.

$$\log_{49} x = \frac{1}{2}$$

Find the distance between the points (1, 3) and (5, 2).
Solve. Graph the solution on a number line. $|2x-1| \geq 2$ or $|2x-1| \leq 2$.
Graph.

$$y = -\frac{3}{2}x + 1$$

Find the exact value of the logarithm $log_7\sqrt{7^{3000}}$.
Solve. $y^{2/3} - 5y^{1/3} + 4 = 0$.
Write the first four terms of the sequence with the general term $a_n = (-2)^n + 1$.
Find the 30th term of the sequence 1, 4, 7, 10, ...
Find the vertex, axis of symmetry, x-intercepts, and y-intercepts of $f(x) = -x^2 - 6x + 12$.
Know $a^2 + b^2 = c^2$ like this problem. The top of a ladder leans against a house at a height of 12 feet. The length of the ladder is 8 feet more than the distance from the house to the base of the ladder. Find the length of the ladder.
Know factorial. What is 0! or 1! or 2! or 3! or 4! or 5!?
On the final review you should go over these problems:
2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 32, 33, 34, 35, 36, 367, 38, 39, 45, 48, 49, 52, 57, 65, 75, 83, 87, 88