College Algebra Final Exam # Version 1 [1]

1. Find the domain of $\sqrt{x-3}$.

2. Solve the inequality $|2x+5| < 7$.

3. Solve the following equations:
$$4^{2x-1} = 8.$$

4. Compute $\log_{27} \frac{1}{3}$.

5. Solve the following inequality:

$$3x^2 - 7x + 4 \geq 0.$$

6. Solve the following equation:

$$(\ln x)^2 - \ln(x^2) + 1 = 0.$$

7. Solve the following equations:

$$e^x + 3e^{-x} = 4.$$

8. Find the equation of the straight line passing through $(2, 5)$ and $(6, 7)$.

9. Solve the following system of equations:

$$x^2 - 2y^2 = 7; \qquad x + y = 4.$$

10. Solve the following system of linear equations using elimination:

$$5x + 2y = 9, \qquad 2x + 3y = 8.$$

11. Solve the following equation:

$$\log_2(x-2) + \log_2(x+1) = 2.$$

12. Draw the graph of $y = e^{x+1}$. Indicate the y-intercept and the asymptotes.

13. Draw the graph of $y = x^2 - 2x + 3$. Indicate the y-intercept and the vertex.

14. Find the slope, the x-intercept and the y-intercept of $3x + y = 6$.

15. Express the complex number $\frac{1+i}{3+2i}$ in the standard form.

16. Find the rational zeros of the following equation:

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

17. Find the center and radius of the following equations:

$$x^2 + 4x + y^2 = 6y + 3.$$

18. Find if $\ln x + \ln y = 1$ define y as a function of x.

19. Compute the vertical and horizontal asymptotes of $\frac{2x^2-1}{x^2-4}$.

20. State the fundamental theorem of algebra.