

**East Los Angeles College**  
**Department of Mathematics**

**Math 125**  
**Final Exam**

Solve the following for x

1)  $|x - 5| + 4 = 11$

2)  $-2|x| + 6 = -18$

3)  $(x + 4)^2 = 49$

4)  $x^2 = -20$

5)  $2x^2 + x + 5 = 0$

6)  $4\sqrt{x} = x$

7)  $x^2 - 5x + 3 = 0$

8)  $2\sqrt{x} + 4 = 8$

Use Sign Analysis to graph the following.

9)  $x^2 - x - 20 \geq 0$

10)  $\frac{x+1}{x-2} \leq 0$

11)  $\frac{x-1}{x-2} > 1$

12)  $x(x - 5)(x + 4) < 0$

Given the quadratic  $y = 3x^2 - 6x - 2$  answer the following questions.

13) Complete the square to describe your quadratic in graphing format.

$$y = a(x - h)^2 + k$$

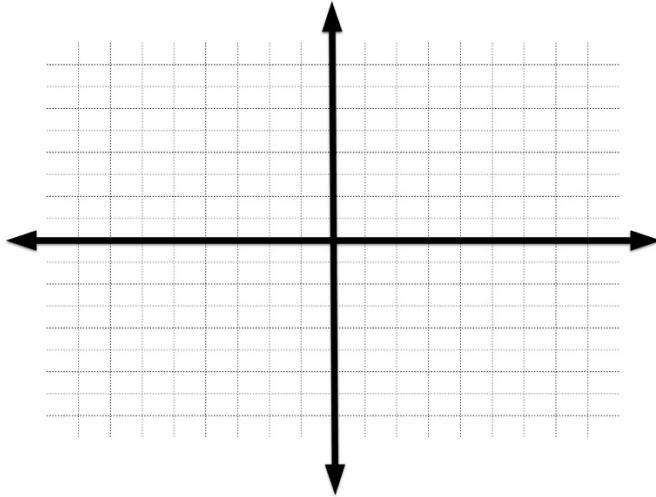
14) Determine the vertex

15) Opens up/down

16) Determine the x-intercepts, if any.

17) Determine the y-intercepts

18) Sketch the curve on the graph paper.



Solve the following equations for x

19)  $2^{x+1} = 16$

20)  $3^{-x} = \frac{1}{81}$

21)  $25^x = 5$

22)  $4^x = 20$

23)  $3^x = 3^{x+1}$

24)  $e^{-2x} = 12$

25)  $\log_2(x - 3) + \log_2(x + 3) = 4$

26)  $\log_4(x) - \log_4(x - 15) = 2$

The half-life of caffeine in the human body for a healthy adult is 10 hours.

27) What is the exponential decay rate?

28) How long will it take for 90% of the caffeine consumed to leave the body?

29) The half-life of Carbon-14 is 5,750 years. What is the decay rate of Carbon-14?

30) If a coin found in ELAC's parking structure has lost 12% of its Carbon-14, how old is the coin?

31) What is your name?

1		16	
2		17	
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