

XIII. Determine all points of intersection.

1. parabola  $y = x^2 + 3x - 4$  and  
line  $y = 5x + 11$

2.  $y = \cos x$  and  $y = \sin x$  in the  
first quadrant

XIV. Solve for  $x$ , where  $x$  is a real number. Show the work that leads to your solution.

1.  $x^2 + 3x - 4 = 14$

2.  $\frac{x^4 - 1}{x^3} = 0$

3.  $(x - 5)^2 = 9$

4.  $2x^2 + 5x = 8$

5.  $(x + 3)(x - 3) > 0$

6.  $x^2 - 2x - 15 \leq 0$

7.  $12x^2 = 3x$

8.  $\sin 2x = \sin x$ ,  $0 \leq x \leq 2\pi$

9.  $|x - 3| < 7$

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

11.  $27^{2x} = 9^{x-3}$

12.  $\log x + \log(x - 3) = 1$

13.  $e^{3k} = 5$

14.  $\ln y = 2t - 3$

XIV. Graph each function. Give its domain and range.

1.  $y = \sin x$

2.  $y = \cos x$

3.  $y = \tan x$

4.  $y = x^3 - 2x^2 - 3x$

5.  $y = x^2 - 6x + 1$

6.  $y = \frac{x + 4}{x - 1}$

7.  $y = \frac{x^2 - 4}{x + 2}$

8.  $y = e^x$

9.  $y = \sqrt{x}$

10.  $y = \sqrt[3]{x}$

11.  $y = \ln x$

12.  $y = |x + 3| - 2$

13.  $y = \frac{1}{x}$

14.  $y = \begin{cases} x^2 & \text{if } x < 0 \\ x + 2 & \text{if } 0 \leq x \leq 3 \\ 4 & \text{if } x > 3 \end{cases}$

XVI. Identify, by name, each polar graph. Give at least one characteristic of each graph (e.g. radius, location, length of petal, point (other than the pole) on the graph, etc.)

1.  $r = 2$

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2.  $r = 3 \sec \theta$

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3.  $r = 1 + \sin \theta$

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4.  $r = 2 \cos 3\theta$

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(Modified from the www)