

## College Algebra Exam #2 Version 1

1

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1. Find the center and radius of  $x^2 - 2x + y^2 = 0$ .
2. Find the equation of the circle with center  $(2, 3)$  and radius 5.
3. Test the symmetries for  $x = |y|$ .
4. Find the slope of the straight line passing through  $(-1, 0)$  and  $(2, -2)$ .

5. Compute the x-intercept and the y-intercept of  $\frac{x}{5} + y = 1$ .

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

7. Compute the vertex of  $y = x^2 - 6x$ .

8. Let  $f(x) = x^2$  and  $g(x) = x + 2$ . Compute  $f(g(x))$  and  $g(f(x))$ .

9. Draw the graph of  $y = (x - 1)^3$ . What is its relationship with the graph of  $y = x^3$ ?

10. Find the inverse function of  $f(x) = 2 - \frac{3}{x}$ .

11. Find the roots of  $2x^3 + x^2 - 5x + 2 = 0$ .

12. Compute the vertical asymptotes of  $y = \frac{x}{x^2 - 1}$ .

13. Compute the horizontal asymptotes of  $y = \frac{2x+1}{3x+2}$ .

14. Write down two polynomials such that both polynomials have two roots 1 and 3.

15. Does the equation  $x^2 - \frac{1}{y} = 1$  define a function? Explain.

16. Graph the function  $f(x) = \frac{1}{x} + 2$ .

17. Find the equation of the straight line passing through  $(1, 2)$  with slope 5.

18. Compute the distance between  $(2, 3)$  and  $(6, 6)$ .

19. (Yes or No) Find all the one-to-one functions in the following list:

$$x^2, \quad x^3, \quad \frac{1}{x}, \quad x + 5, \quad \sqrt{x}.$$

20. Write down the coordinates of the point symmetric to  $(2, -4)$  with respect to

- the  $x$ -axis;
- the  $y$ -axis;
- the origin.

Plot these points on the  $xy$ -plane.