MATH 2: Midterm 2 preparation

Answer in your own words:

1. What is the general form of an equation of a line? What are the geometrical interpretation of each variables?

2. What is the formula for a slope?

3. What is the slope of the line containing $(1, 3)$ and $(2, -4)$

4. What is the general strategy of how to find an equation of a line, when one point and the slope are given?

5. What is the general strategy of how to find an equation of a line, when two points are given?

6. Find the equation of the line containing $(3, 0)$ and $(0, -2)$.

7. How do you check if two lines are parallel? How do you check if two lines are perpendicular?

8. Find a line containing $(0, 1)$ perpendicular to a line from problem 3.

9. Given a equation that involves x, y, what does it mean for the point $(\square, \triangle)$ to be on the graph of the equation? (This problem is actually from midterm 1).

10. Find all t such that the point (t, t^2) is on the line $y = -x + 12$

11. Define a function whose domain is a set of students in Triton prep program.

12. Suppose a formula of the function f is given, what is the general strategy to find the domain of f?

13. Find the domain of $f(x) = \dfrac{3}{x} + \sqrt{2x+1}$.

14. Sketch the graph of $f(x) = x^{-2}$, $f(x) = x^{-1}, f(x) = \sqrt{x}, f(x) = x^2$ and $f(x) = x^3$.

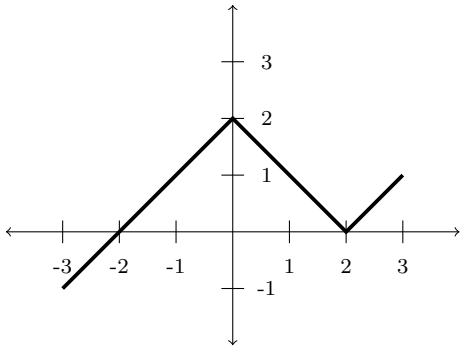
15. If $f(x) = x^2$, write a formula for $f(x-h)+k$

16. What is the graph of $g(x) = f(x-h)+k$ compared to $f(x)$.

17. Let $g(x) = (x-3)^3 - 4$. Compared to problem 16, what is $f(x)$? What are h and k? Sketch the graph of g.

18. What does it mean for the point $(\square, \triangle)$ to be on the graph of f? Given the graph of f, how do you find $f(x)$ for several values of x?

19. Suppose the graph of f is given below:



Find $f(-3), f(-2), f(-1), f(0), f(1), f(2)$ and $f(3)$.

20. What is a general strategy to find intersection points of two graphs?

21. Find all intersection points of $yx^2 = 4$ and $2xy - 3y = 0$

22. What is a common factor?

23. What do you do when you want to factor an expression by grouping?

24. Factor $bx^2 + 2a^2y - 2bxy - a^2x$

25. Solve for x: $bx^2 + 2a^2y - 2bxy - a^2x = 0$. (Hint: what is the zero factor property?)

26. What does it mean to rationalize something?

27. What is the conjucate of $x + \sqrt{11}$?

28. Simplify $\dfrac{x^4 - 49}{x + \sqrt{7}}$

29. How do you convert angle from radians to degrees? From degrees to radians?

30. Convert $\dfrac{2\pi}{3}$ radians to degrees. Convert -60 degrees to radians.

31. What are the definitions of $\sin(\theta)$ and $\cos(\theta)$?

32. Find (without looking at the table) $\sin(0), \sin(\pi/6), \sin(\pi/4), \sin(\pi/3)$ and $\sin(\pi/2)$. Do the same for cos

33. Based on the diagram below, find x and y:

