

MATH 1310

Final Exam Review

1. Find the slope of the line that passes through the points $(4,6)$ and $(-2,-4)$.

2. Find the x and y intercepts $2x + 8y + 2 = 0$.

3. Solve for x: $\frac{2}{3}x = \frac{4}{5}$

4. Solve for x: $\frac{1}{2}(x + 1) - \frac{1}{3}(x - 2) = 4$

5. The perimeter of a rectangle is 70 m. If the length 4 times its width. Find the length of this rectangle.

6. Find three consecutive integers whose sum is 336.

7. Solve by factoring: $2x^2 + 5x + 3 = 0$

8. Solve by factoring: $x^2 + 36$

9. Simplify: $(2i - 1) - (1 - i)$

10. Simplify: $3i(2 - 3i)$

11. Simplify: $\frac{2 + 3i}{4 + i}$

12. Simplify: $\frac{1}{3-i}$

13. Solve for x: $-2 \leq \frac{(3x + 2)}{3} < 2$

14. Solve for x: $5 + 2|x + 5| = 7$

15. Solve for x: $-2|x - 1| \leq -6$

16. Solve for x : $|3x - 4| < 5$

17. Find the domain: $f(x) = \frac{x+2}{x-1}$

18. Find the domain: $f(x) = \sqrt{3x + 9}$

19. Calculate $f(2)$ if $f(x) = -2x^2 + 3x - 2$.

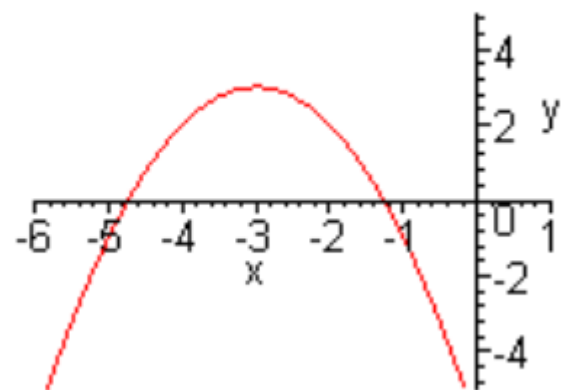
20. Calculate $f(4)$ if $f(x) = \begin{cases} x - 1 & x < 2 \\ 3 & x = 2 \\ -x & 2 < x \end{cases}$

21. Solve for x using substitution:

$$3x^8 - 14x^4 - 5$$

22. What reflections and transformations take $f(x) = |x|$ to the function $f(x) = 3 - |x - 1|$

23. Find the function form from the graph.



24. Find the vertex; $f(x) = x^2 - 14x + 64$

25. Find the vertex: $f(x) = -2x^2 - 8x + 5$

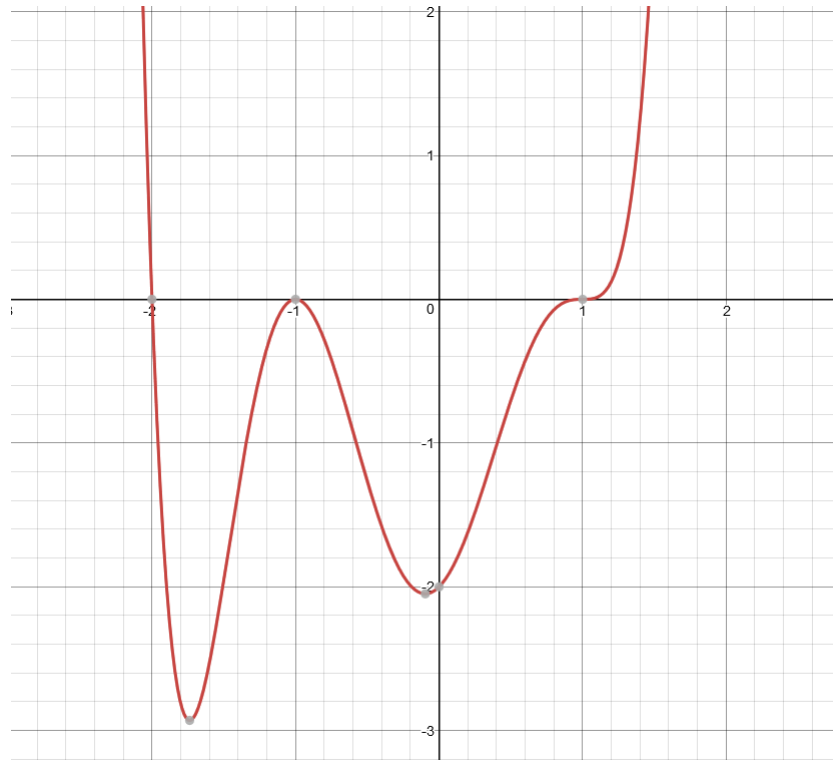
26. Given $f(x) = 2x + 3$ and $g(x) = x^2 + 2x$

a. Find $(f \circ g)(x)$

b. Find $(g \circ f)(-1)$

27. Find the inverse of $f(x) = \frac{1}{x-1}$

28. The function which corresponds to the graph.



29 Find the quotient and remainder $\frac{2x^3 + 13x^2 + 28x + 21}{x^2 + 3x + 1}$

30. Find the quotient and the remainder $\frac{-2x^2 + 14x - 16}{x - 1}$

31. Find the zeros of a polynomial by factoring:

$$f(x) = x^2 - 8x + 16$$

32. Given $f(x) = 5 - 4^x$

a. Asymptote?

b. Range?

33. What is the transformation of the key point (1, 0):
 $\log_6(x - 2) - 4$

34. Simplify: $f(x) = \log_2\left(\frac{1}{2^3}\right)$

35. Solve: $\log_4(x - 1) = 0$

36. Solve: $\ln x = 2$

37. Solve: $\log(x + 2) + \log(x - 1) = \log 10$

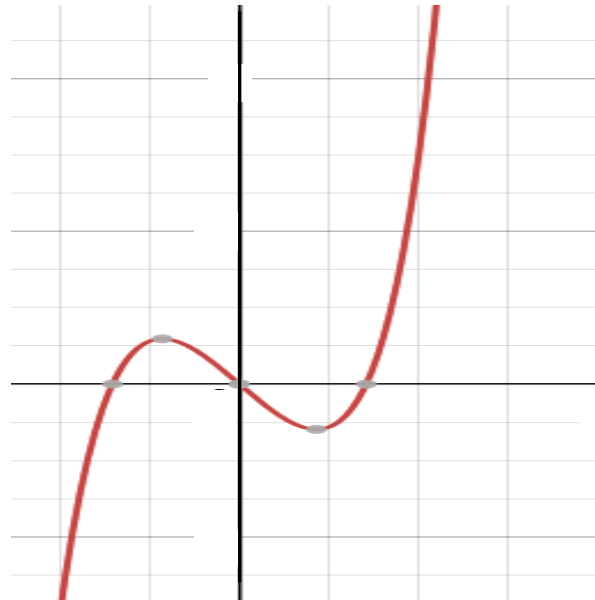
38. Solve the following for x : $\frac{5}{2x} + \frac{6}{x} = \frac{17}{6}$

39. The function

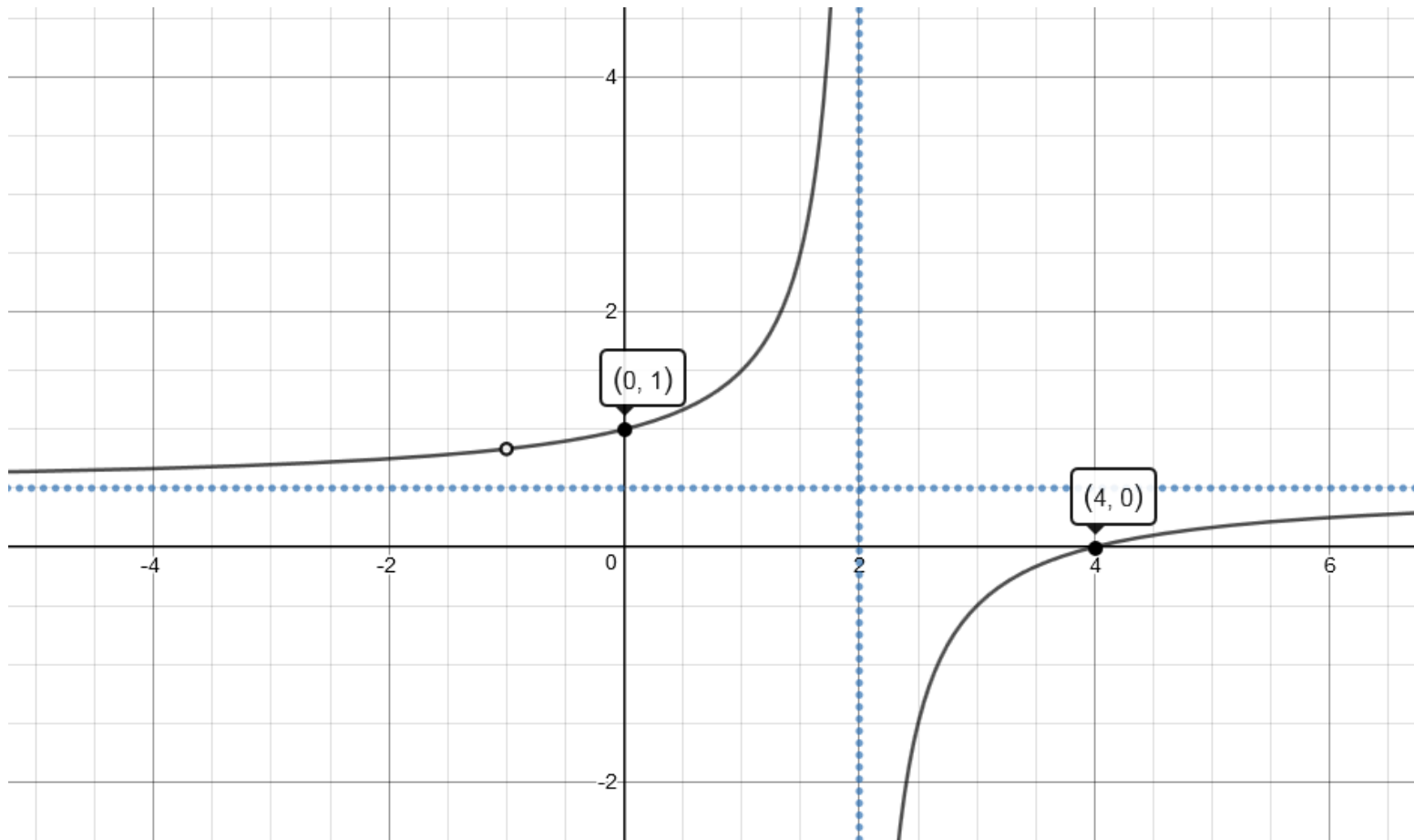
$$f(x) = ax^8 + bx^6 - cx^4 + dx^2 + e$$

passes through the point $(-3, 7)$. What other point must it pass through?

Which is a possible graph of this function:



Determine the function of the following:



Solve the system:

$$y = 4x + 1$$

$$2x + 3y = -39$$

Now, solve this system:

$$8x + 2y = 3$$

$$y = -4x + 2$$

Rewrite the equation of the parabola in standard form: $y = 2x^2 + 16x - 5$

Simplify: $\frac{\sqrt{-25}+3}{\sqrt{-9}\cdot\sqrt{-16}}$

Find all complex solutions to: $3x^2=75$

Solve for x : $\sqrt{x + 3} - 3 = x$

Solve the inequality: $7x^2 - 5x < 5x^2 + 3$

Solve the inequality: $\frac{x^2 - x - 6}{x + 1} \geq 0$

Write the polynomial function with roots of $2i$ and 6 , with an x -intercept of 48 .

Find the vertical asymptotes, horizontal asymptotes, and hole of the following:

$$f(x) = \frac{x^2 + 7x + 10}{x^3 - 25x}$$

Expand the logarithmic expression:

$$\log_2 \left(\frac{\sqrt{x+4} \cdot (x-2)^3}{x^5} \right)$$

Simplify: $\log_5 \left(\frac{1}{125} \right)$