# MATH 1314

Final Exam Review

30 Multiple Choice Questions (Equally Weighted)

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:** $\dfrac{2+3i}{4+i}$

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

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

**14. Solve of 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:** $f(x) = \dfrac{x+2}{x-1}$

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

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

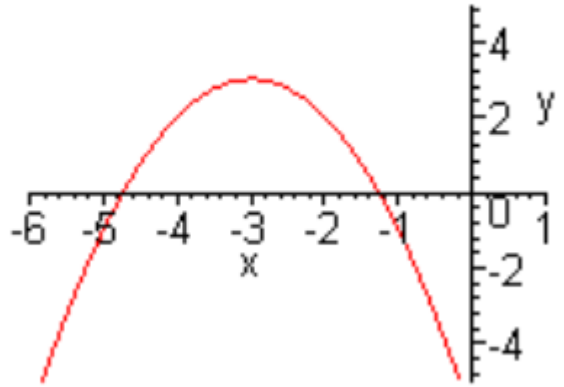
20. Calculate $f(4)$ if $f(x) = \begin{cases} x-1 & x < 2 \\ 3 & x = 2 \\ -x & 2 < x \end{cases}$

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 the graph.**



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

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

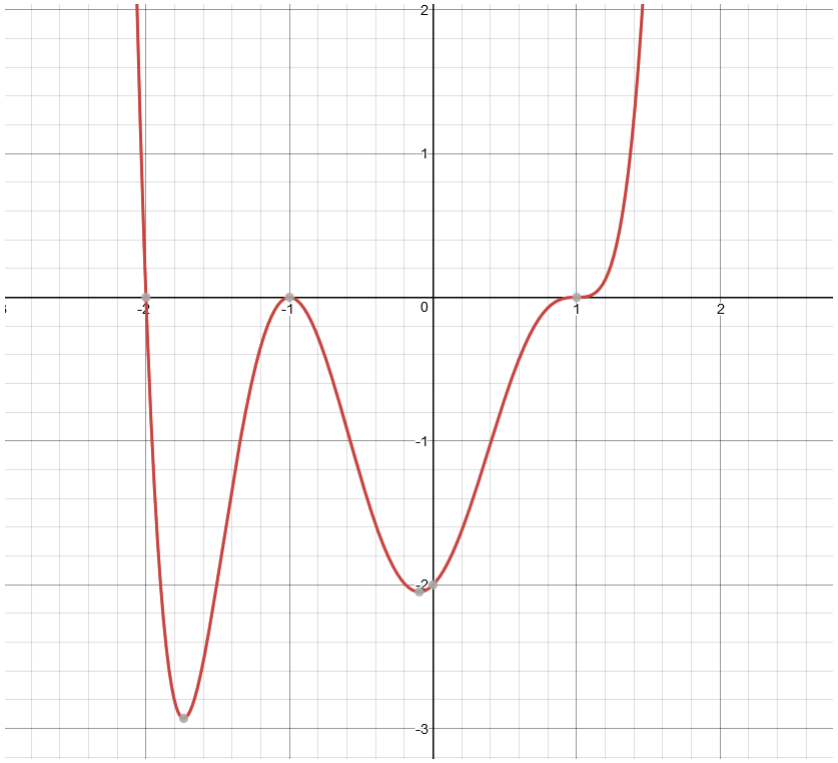
**26. Given $f(x) = 2x + 3$ and $g(x) = x^2 + 2x$**

**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** $\dfrac{2x^3 + 13x^2 + 28x + 21}{x^2 + 3x + 1}$

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

**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: $\log_4(x-1) = 0$**

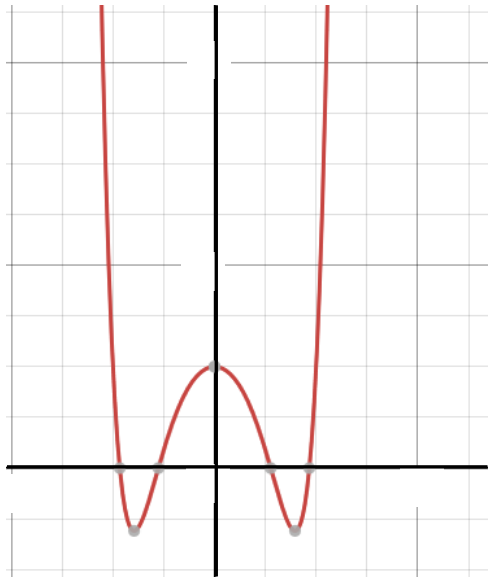
**36. Solve: $\ln x = 2$**

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

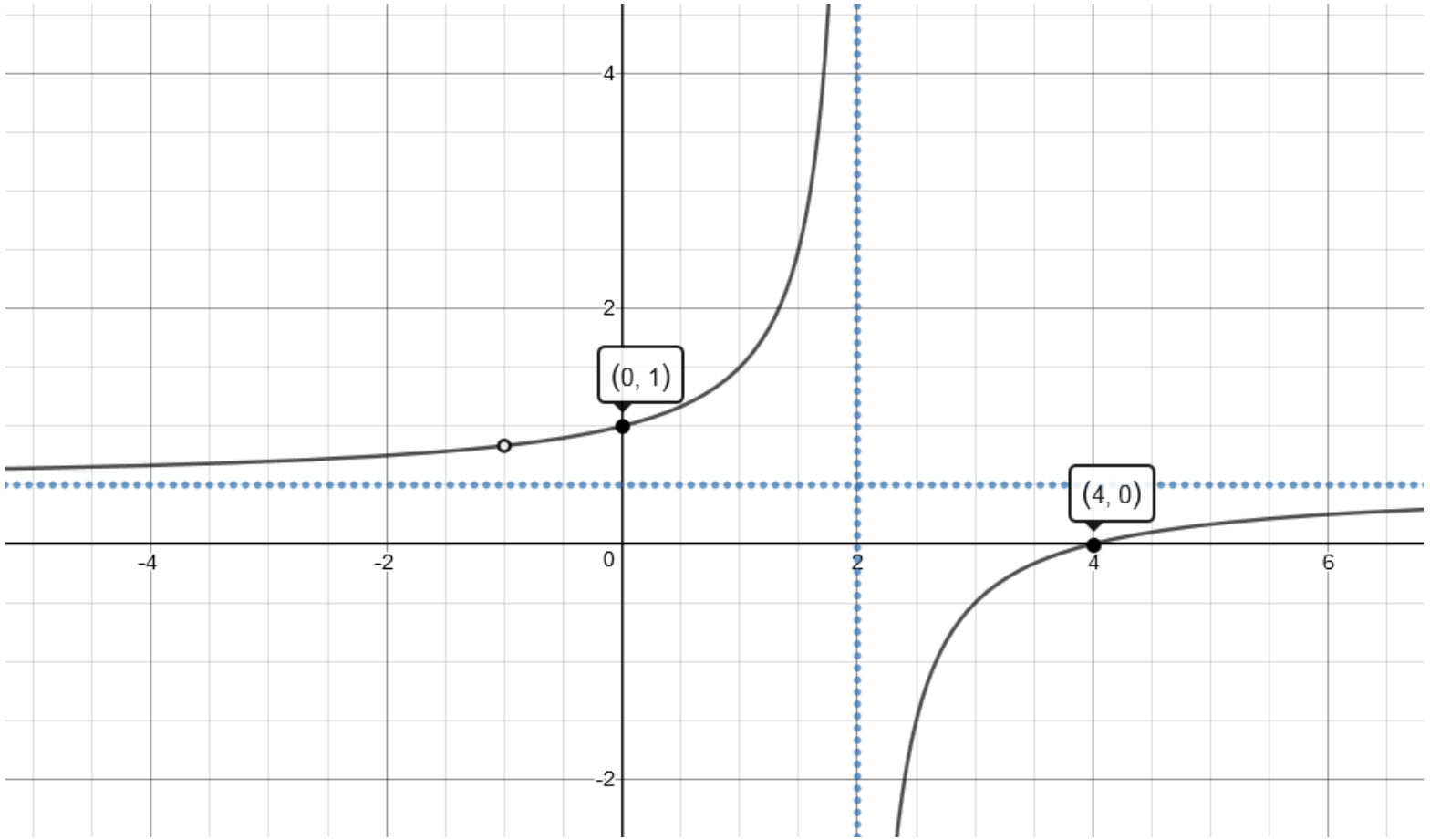
38. Solve the following for x: $\frac{5}{2x} + \frac{6}{x} = \frac{17}{6}$

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:



# 40. Determine the function of the following:



41. Solve the system: $$\begin{aligned} y &= 4x + 1 \\ 2x + 3y &= -39 \end{aligned}$$

42. Now, solve this system: $\begin{aligned} 8x + 2y &= 3 \\ y &= -4x + 2 \end{aligned}$

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

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

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

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

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

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

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

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

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

51. Expand the logarithmic expression:

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

52. Simplify:

$$\log_8\left(\frac{1}{256}\right) + \log_8\left(\frac{1}{2}\right) - \log_{(0.27)}(0.27)^{-5}$$

53. The polynomial,
$p(x) = x^4 - 10x^3 + 19x^2 - 30x + 48$ has a root located at (8,0). Determine all roots of the polynomial.

54. Given the function $f(x) = x^2 + 2x$ determine the value of $f(1/a+1)$