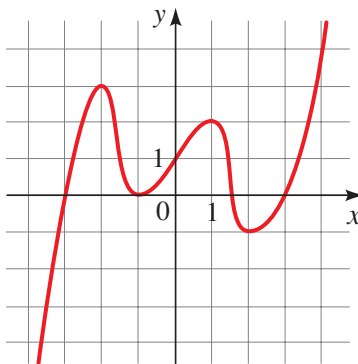


The following 20 problems cover the material that will appear on Exam 2 (§1.3–3.1). Answer all problems without a calculator. Simplify all fractions and radical expressions that appear in your answers.

We will take Exam 2 during the second half of class on **Tuesday, 7/25**.

1. Find the slope of the line through the points $P(6, 3)$ and $Q(2, 0)$.
2. Find an equation of the line through the point $(1, -4)$ that is parallel to the line $x + 2y + 6 = 0$.
3. Find all real solutions to $0 = x^2 - 4x + 1$.
4. Find all real solutions to $\frac{4x}{x^2 + 4} = 1$.
5. Use interval notation to state the solutions to the inequality $4x + 7 < \frac{3}{2}$.
6. Use interval notation to state the solutions to the inequality $2x^2 + 5x \geq 0$.
7. Evaluate $f(2) + f(-1)$ when $f(x) = x^3 - 3x$.
8. Use interval notation to state the domain of the function $f(x) = \sqrt{1 - 5x}$.
9. Use the graph below to find the value of x at each local maximum.



10. Determine the net change of $r(t) = 6 - \frac{t}{6}$ from $t = 6$ to $t = 12$.
11. Find $f^{-1}(10)$ when $f(x) = 6x + 7$.
12. Evaluate $g(f(2))$ when $f(x) = 5x - 2$ and $g(x) = 3 - x^2$.
13. Use the table below to evaluate $g(f(3))$.

x	1	2	3	4	5	6
$f(x)$	2	3	5	1	6	3
$g(x)$	3	5	6	2	1	4

14. True or false: $f(x) = 4 - 3x$ is the inverse of $g(x) = \frac{3-x}{4}$.

15. Find a formula for the inverse of $f(x) = 2x^3 - 5$.
16. Find the vertex of the parabola $y = x^2 + 4x$.
17. Use interval notation to state the range of the quadratic function $h(x) = -x^2 - 4x + 4$.
18. Find all x -intercepts of the graph $y = -x^3 + 3x^2$.
19. Sketch the graph of the function

$$f(x) = \begin{cases} 1 - x & \text{if } x \leq 0 \\ x & \text{if } x > 0 \end{cases}$$

20. Sketch the graph $y = -\sqrt{x+2}$ not by plotting points but by starting with the graph of a standard function and applying transformations.