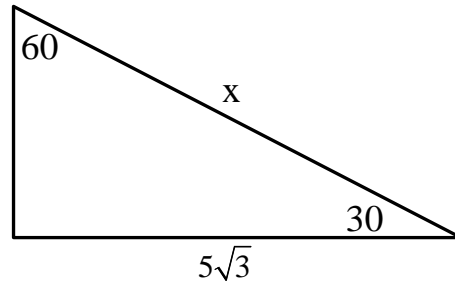


Pre-Calculus Homework #4

- 1) Solve: $-3^2 - 32 \div 16(-1-1) - 6x - 8^0 - (7x+6) = -(-3-1)^3 - 3x - 4(5x-7)$
- 2) Simplify: $\frac{-8 + 65x - 2x^4}{x-3}$
- 3) Find the distance between the points $(-5, 9)$ and $(7, -9)$. If these two points are on a line, find the equation of that line.
- 4) Find x in the following triangle.



- 5) Solve: $x^2 = 11x + 18$
- 6) Solve $x^{\frac{1}{3}} - 5x^{\frac{1}{6}} = -6$
- 7) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the following piecewise relation

$$y = \begin{cases} |x-3| - 1 & \text{for } x > 1 \\ -x^2 - 2x + 6 & \text{for } 1 \geq x > -3 \\ \frac{-2}{3}x - 8 & \text{for } x \leq -3 \end{cases}$$

- 8) Solve $2x^{\frac{1}{2}} + 5x^{\frac{1}{4}} = 12$
- 9) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the relation $y = x^2 - 8x + 9$
- 10) Solve $3\sqrt[3]{x} + \sqrt[6]{x} = 2$

- 11) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the following piecewise relation

$$y = \begin{cases} x^2 - 14x + 44 & \text{for } x > 4 \\ \frac{-x^3}{3} + \frac{x^2}{2} + \frac{11x}{6} - 8 & \text{for } 4 \geq x \geq -3 \\ -|x+5| + 6 & \text{for } x < -3 \end{cases}$$

12) Solve $x^4 + x^2 = 42$

- 13) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the relation $y = -3\sqrt{x+5} + 4$

14) Solve $x - 2\sqrt{x} = 48$

- 15) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the following piecewise relation

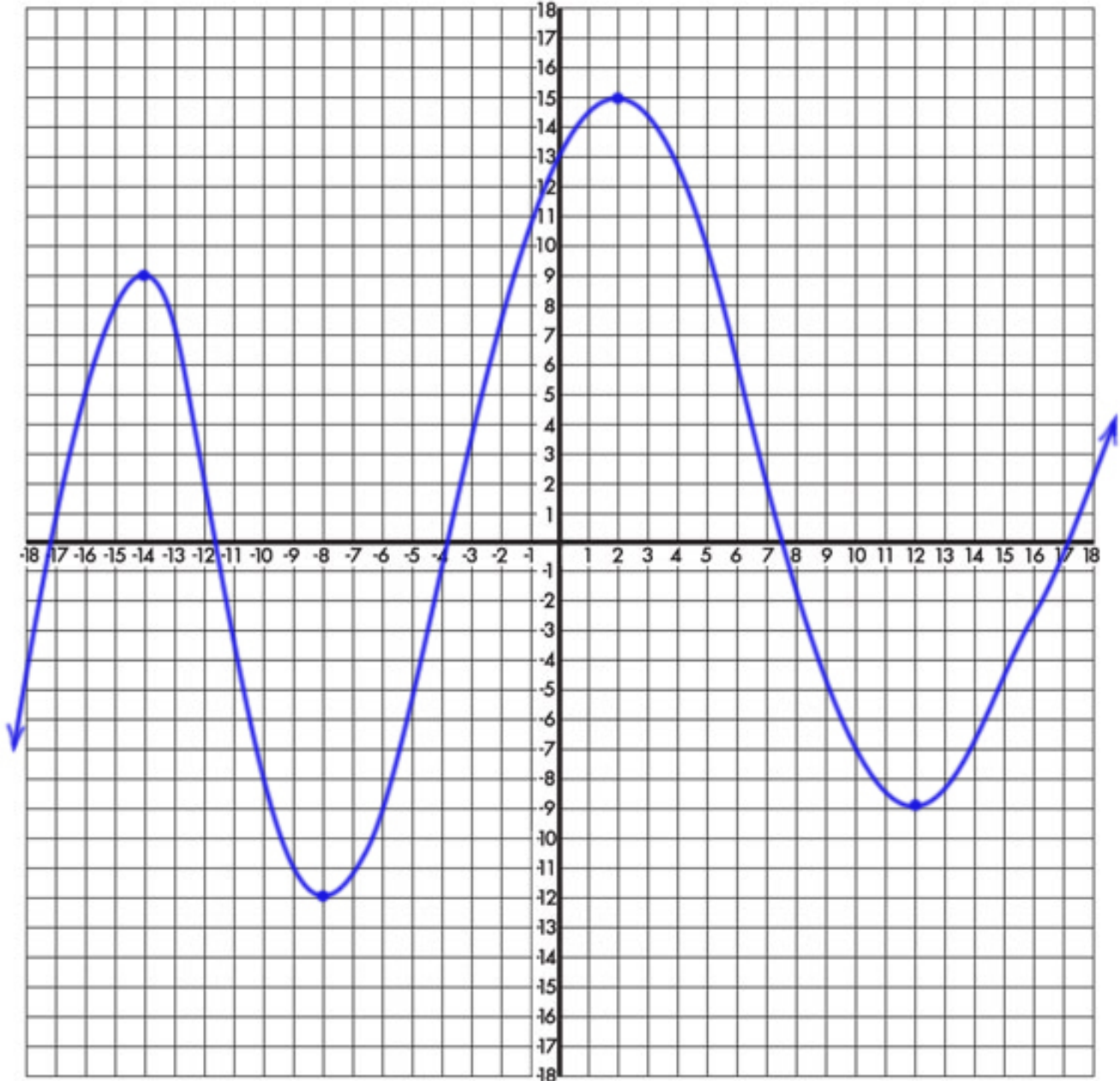
$$y = \begin{cases} 3\sqrt{-x+8} - 5 & \text{for } x > 4 \\ |x+1| - 3 & \text{for } -2 \leq x < 4 \\ x^2 + 12x + 29 & \text{for } x < -2 \end{cases}$$

16) Solve $x^6 - x^3 = 12$

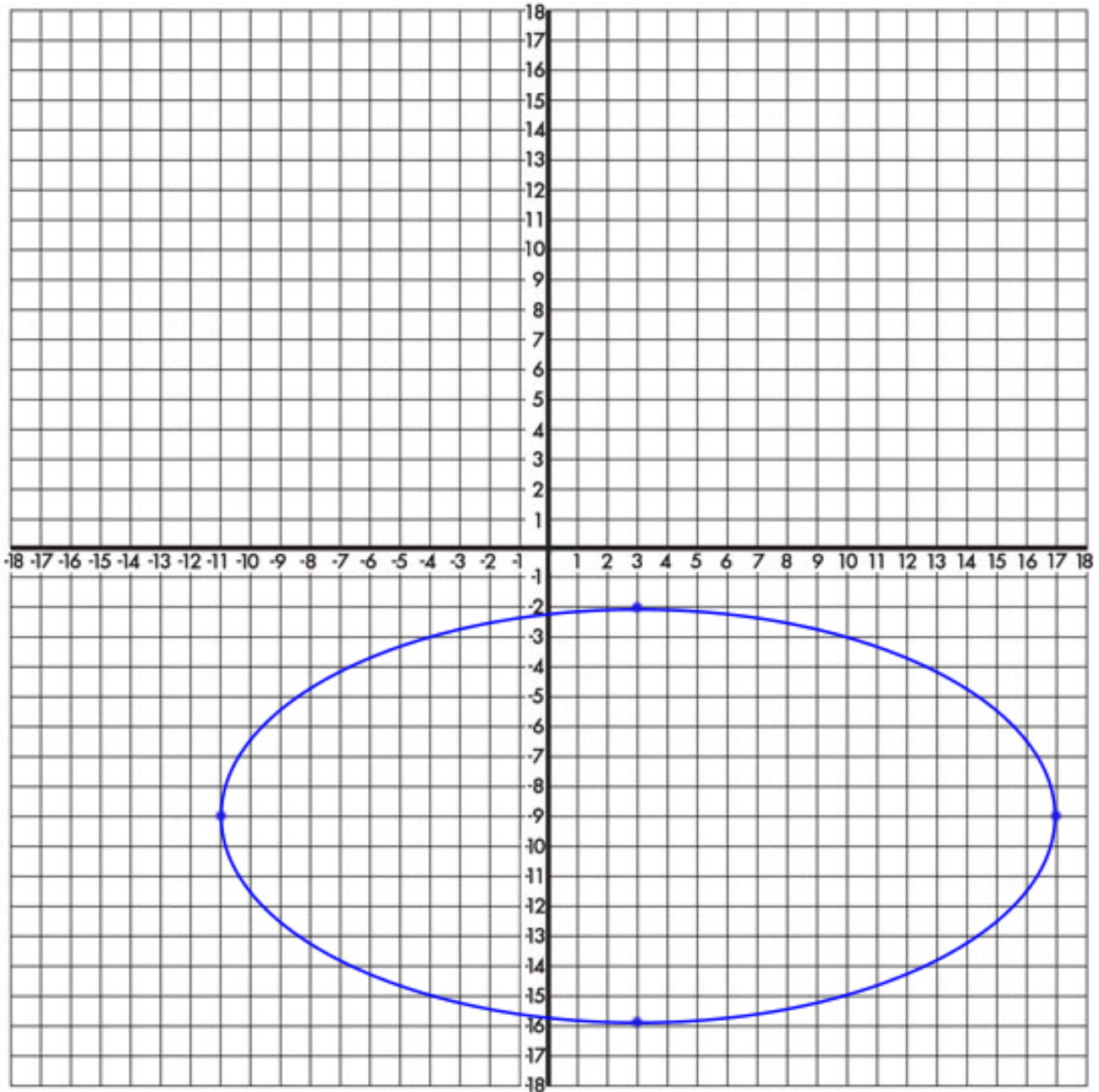
- 17) Graph, determine if the graph is a function and, if it is, rewrite the relation using function notation, find all relative maxima and minima, determine the domain and range, and identify the intervals where the graph is increasing or decreasing for the

relation $y = \frac{x^3}{3} - \frac{x^2}{2} - 6x$

- 18) Determine if the following relation is a function, find all relative maxima and minima, determine the domain and range, and, if it is a function, identify the intervals where the graph is increasing or decreasing.



- 19) Determine if the following relation is a function, find all relative maxima and minima, determine the domain and range, and, if it is a function, identify the intervals where the graph is increasing or decreasing.



- 20) Determine if the following relation is a function, find all relative maxima and minima, determine the domain and range, and, if it is a function, identify the intervals where the graph is increasing or decreasing.

