

This will be graded as a 100 point test. Point value is indicated at the beginning of each section. Complete the following to the best of your ability. Some questions may require independent learning. SHOW ALL WORK.

(5 points each) If $f(x) = x^2 - x$, evaluate the following.

1. $f(2)$

2. $2f(x)$

3. $f(2 + h)$

4. $f(x + h)$

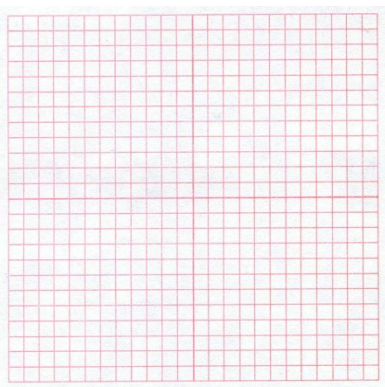
(8 points each) Find the domain and range of each function. A graph may be useful.

5. $f(x) = \sqrt{1 - x^2}$

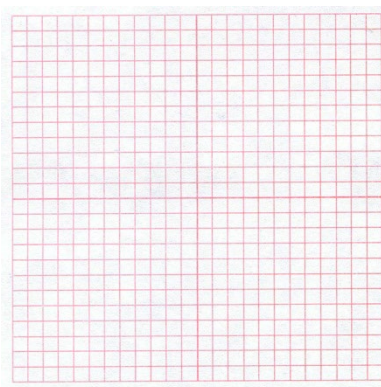
6. $g(x) = \frac{x^2 + 1}{x^2 - 1}$

(10 points each) Graph the following in the area provided. Be precise, and indicate units on the axes.

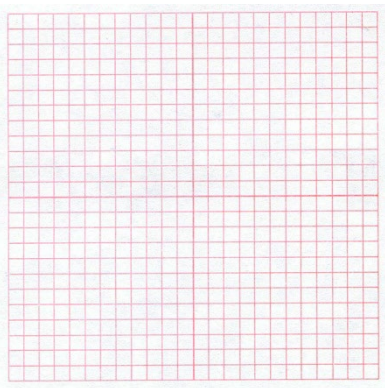
7. $f(x) = 4 + 6x + x^2$



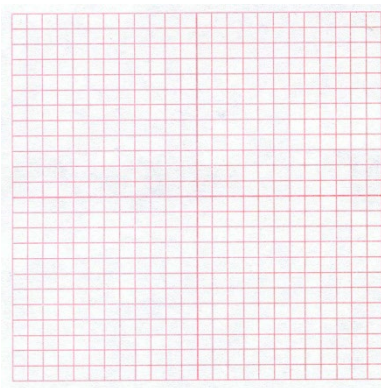
8. $f(x) = x^3 - 3x^2$



9. $f(x) = x^4 - 4x^3$



10. $y = 2\sin(2x + \pi/2)$



(12 points each) Complete the following.

11. Find all solutions for $3x^3 + x^2 = 2 - x$

(Hint: Graph each side of the equation and find the intersections)

12. Find where $g(x) = x^3 - x$ intersects the x-axis

(Hint: Graph the function and find the zeros or x-intercepts)