

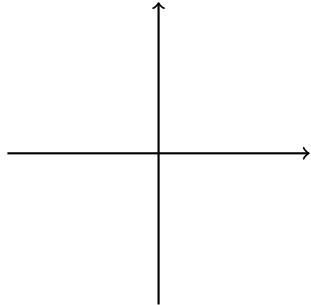
Homework 2 - Math 140

Name: _____

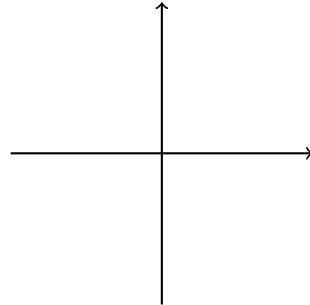
Due by 5:00pm Monday, March 1. Send a PDF with your solutions to blins@hsc.edu.

Using the common basic graphs as a reference, sketch the graphs of the following functions. Be sure to label points where the graphs intersect the x or y -axis.

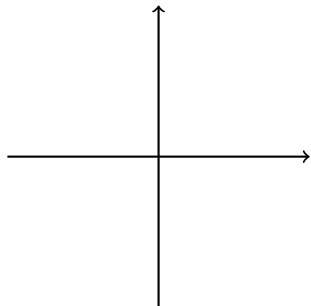
1. $y = \frac{1}{x-3}$



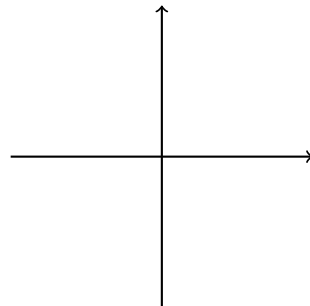
2. $y = \sqrt{x} + 3$



3. $y = \frac{x^2}{4}$



4. $y = -(x+1)^2$



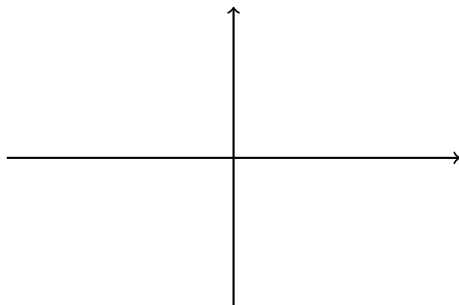
Suppose that $f(x) = \frac{1}{x+2}$ and $g(x) = 4x + 3$.

5. Calculate $f(g(0))$.

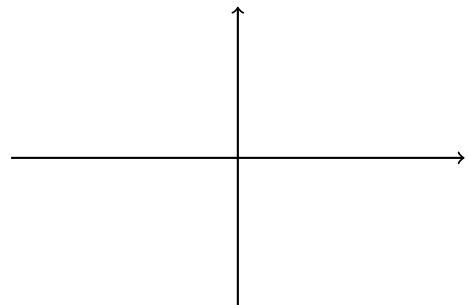
6. Calculate $g(f(0))$.

Factor the following functions to find the roots (i.e., x -intercepts), then graph the functions on the graphs below.

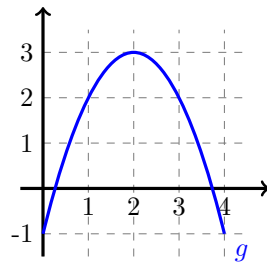
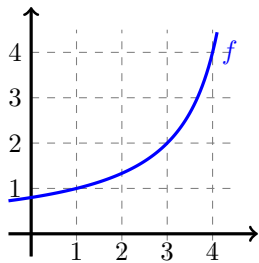
7. $y = x^2 + x - 6$



8. $y = x^3 - 6x^2 + 9x$



The following graphs show two different functions $f(x)$ and $g(x)$.



Use the graphs to evaluate the following.

9. $f(g(2))$

10. $g(f(1))$

11. $g(f(4))$

In each problem below, find an equation for the line that fits the description.

12. Passes through $(1, -2)$ and $(3, 4)$.

13. Passes through $(-4, 5)$ and $(8, 2)$

14. Has a slope of 5 and crosses the x -axis at $x = 3$.

15. Passes through $(3, 4)$ with slope of -6 .

16. Find the slope and y -intercept of the line $4x + 6y = 24$.

17. About 45 million adults in the United States have received at least one COVID vaccine. Every day, about $3/4$ of a million US adults receive their first COVID vaccine dose. If this vaccination rate continues, find a function for the number of adults (in millions) with at least one vaccine dose (y) as a function of the number of days from now (x).

18. At this rate, how many days would it take to vaccinate all 255 million adults in the United States?