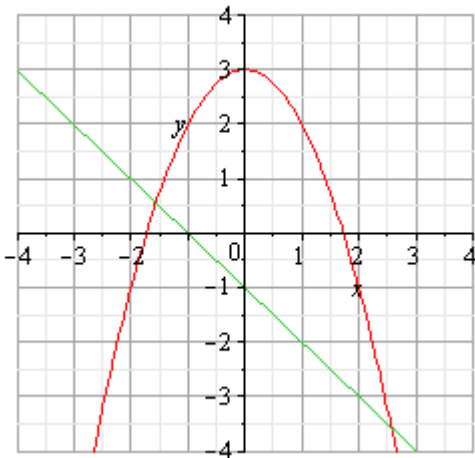


Graded Homework 9

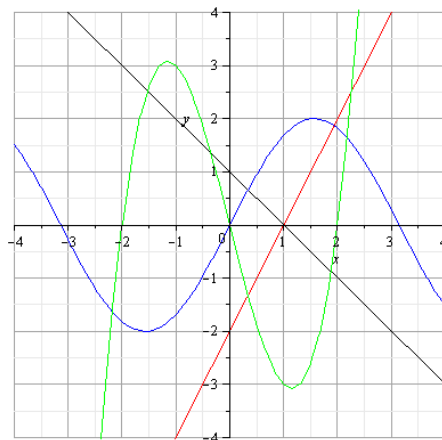
If $f(x) = x^2$ and $g(x) = x + 3$, use this information to find: (See page 586, example 1)

1. $f[g(2)] = (f \circ g)(2)$.
2. $g[f(1)] = (g \circ f)(1)$.
3. $f[g(x)] = (f \circ g)(x)$.
4. $g[f(x)] = (g \circ f)(x)$.

Use the graph below to evaluate where the red curve is the graph of the parabola, $f(x)$, and the green curve is the graph of the straight line, $g(x)$: (see problems 51 to 54 page 594)



5. $f[g(0)] = (f \circ g)(0)$.
6. $g[f(1)] = (g \circ f)(1)$.
7. $g[g(2)] = (g \circ g)(2)$.
8. What is the definition of a one-to-one function? (Don't just repeat a statement from the text, but in your own words, explain what the definition is.) (see page 592)
9. Which of the following graphs represent one-to-one functions, blue, green, red or black?



10. If $y = f(x) = \frac{x^2}{x^2+2}$, $f(1) = 1/3$ and $f(-1) = 1/3$. Why is this not a one-to-one function?

11. If $f(x) = 4x$, then $f^{-1}(x) = x/4$. Calculate $(f^{-1} \circ f)(x)$. (A tricky question, be careful)

For the following functions, calculate $f^{-1}(x)$: (See page 590)

12. $y = x + 8$

13. $y = (3x - 5)/2$

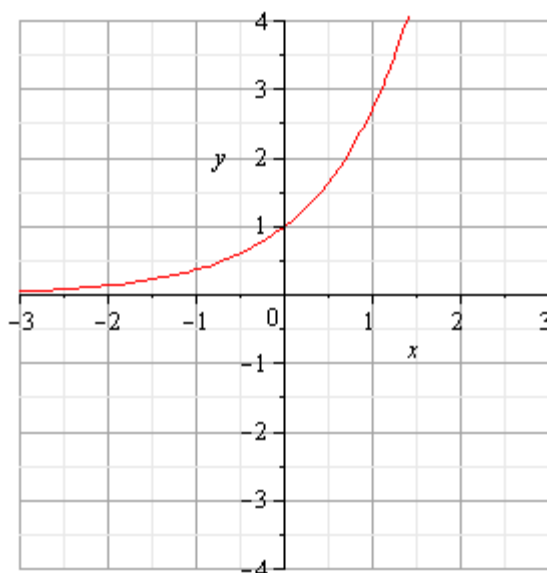
14. $y = -\frac{1}{2}x + 1$

15. $y = \sqrt{x}$

16. $y = x^2 - 3$

17. $y = x^5$

18. Use the graph of $y = f(x)$ below to sketch a graph of f^{-1} . Include the graph of f , $y = x$, and f^{-1} .



19. The function $y = f(x) = 3x$ converts x yards to y feet.

- Is y a one-to-one function?
- Find f^{-1} and interpret what it calculates.

20. The function given by $y = f(x) = \frac{9}{5}x + 32$ converts x degrees Celsius to an equivalent temperature in degrees Fahrenheit.

- Find a formula for f^{-1} .
- Calculate $f(100)$.
- Calculate $f^{-1}(212)$.