

# INTRODUCTION TO CALCULUS

## MATH 1A

### UNIT 7: WORKSHEET

**Problem 1:** Take the following derivatives by using the rule you know

a)  $9x^7$

b)  $12\sqrt{x}$

c)  $7x^{11} + x^{3/2}$

d)  $8 + 2x + x^2$

e)  $1 + x + x^2 + x^3 + x^4 + x^5 + x^6$

**Problem 2:** Take the derivative by using the rules you know:

a)  $5e^x + 2e^{3x}$

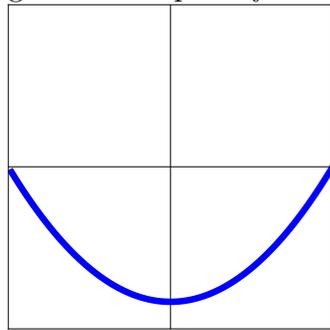
b)  $3 \sin(5x) + 7 \cos(11x)$

c)  $\ln(8x) + 8 \ln(29x)$ .

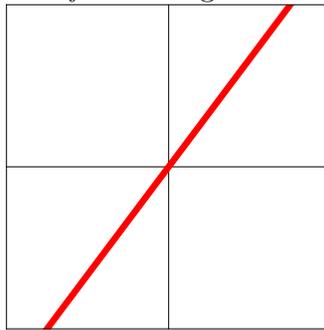
d)  $\frac{1}{x} + \ln(x) + e^{5x}$

e)  $x^{8/11} + x^{11/8}$

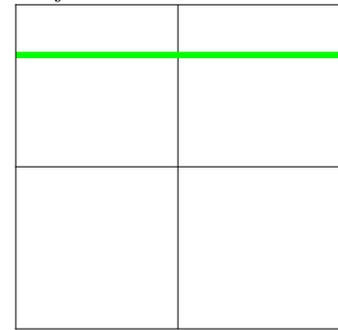
Here we see an example, where to the left we have the function  $f$ , then see  $f'$  which gives the slope of  $f$  at  $x$  and then see  $f''$  which gives the concavity of  $f$  at  $x$ .



f



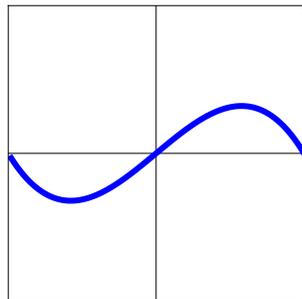
$f'$



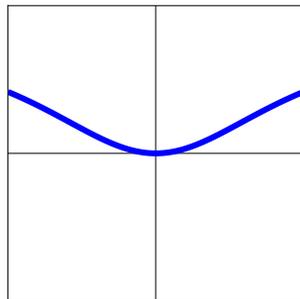
$f''$

Now it is your turn:

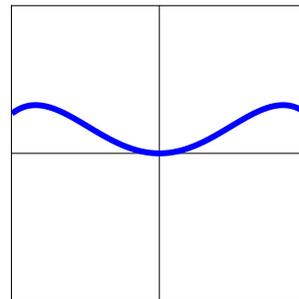
**Problem 3:** Match the functions with their derivative. First we show the functions  $f$



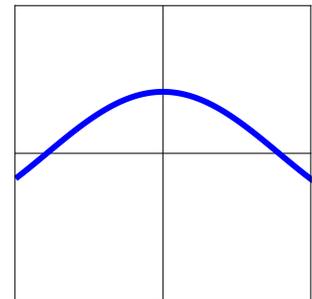
a)



b)

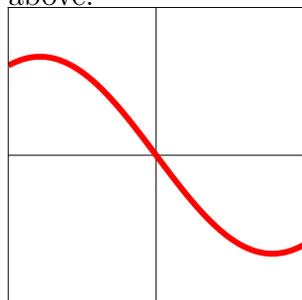


c)

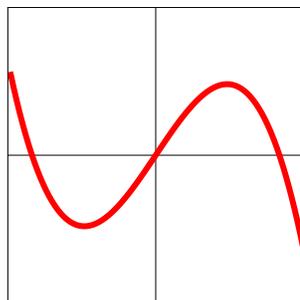


d)

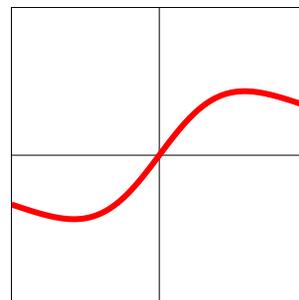
And now we show the functions  $f'$ . Match their graphs with the graphs of  $f$  seen above.



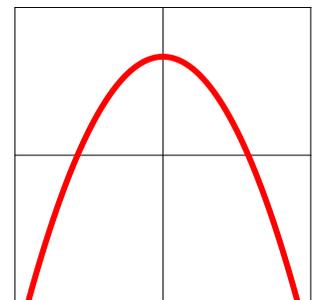
1)



2)



3)



4)