1. Put $f^{\prime}(a), f^{\prime}(b), f^{\prime}(c)$ and $f^{\prime}(d)$ in order from least to greatest.
2. What is meant by $\frac{f(c)-f(a)}{c-a}$ ?
3. Which is the smallest

$$
\frac{f(c)-f(a)}{c-a}, f^{\prime}(c), \frac{f(c)-f(d)}{c-d}, f^{\prime}(b) ?
$$

4. For each problem below make a high quality graph, find the equation of the tangent line at the given point, sketch the tangent line on your graph and confirm
 your answer with a graphing calculator.
a. $\quad f(x)=x^{3} ;(-1,-1)$
b. $\quad f(x)=\sqrt{x} ;(4,2)$
c. $f(x)=(x+1)^{2} ;(-2,1)$
5. Use the definition of the derivative to find $f^{\prime}(x)$.
a. $f(x)=2 x^{2}$
b. $\quad f(x)=\sqrt{x-1}$
c. $f(x)=3 x^{3}+3 x^{2}$
6. Use the definition of the derivative to find the equation of the tangent line at the given point.
a. $f(x)=\sqrt{x}$ at $\mathrm{x}=4$
b. $f(x)=-3 x^{2}+1$
at $\mathrm{x}=-1$
7. Use your calculator to find the derivative and the equation of the tangent line at the given point.
a. $f(x)=\frac{3 x-1}{2 x-3}$ at
b. $f(x)=\sqrt[3]{2 x-1}$
at $x=1$
c. $f(x)=(2 x-1)^{3}$ at $x=-1$
8. Perfectly graph $y=\sin x$ the derivative of $y=\sin x$ on the same graph on the interval $[-2 \pi, 2 \pi]$. What is the derivative of sine?
9. Perfectly graph $y=\cos x$ the derivative of $y=\cos x$ on the same graph on the interval $[-2 \pi, 2 \pi]$. What is the derivative of sine?

Use the figure to answer 10 and 11.
10. Identify each.
a. $\quad f(1)$ and $f(4)$
b. $f(4)-f(1)$
c. $y=\frac{f(4)-f(1)}{4-1}(x-1)+f(1)$
11. Insert > or <.
a. $\frac{f(4)-f(1)}{4-1} \quad \frac{f(4)-f(3)}{4-3}$

b. $\frac{f(4)-f(1)}{4-1} \quad f^{\prime}(1)$


1. $f^{\prime}(b), f^{\prime}(c), f^{\prime}(a), f^{\prime}(d)$
2. Slope of the secant line thru the points $a$ and $c$
3. $f^{\prime}(b)$
4. 


b. $y-2=1 / 4(x-4)$

c. $y-1=-2(x+2)$

5.
a. $\quad f^{\prime}(x)=4 x$
b. $\quad f^{\prime}(x)=\frac{1}{\sqrt{x-1}}$
c. $f^{\prime}(x)=9 x^{2}+6 x$
6.
a. $\quad f^{\prime}(4)=\frac{1}{4}$
b. $f^{\prime}(-1)=6$
7.
a. $y-1=-0.142857(x+2)$
b. $y-1=\frac{2}{3}(x-1)$
c. $y-1=54(x+1)$
8.
9.

10.
a. $\quad f(1)=2, f(4)=5$
b. 5-2 = 3
c. $Y=x+1$
11.
a. >
b. <

