1. $\frac{2}{3}$
2. $\frac{3}{5}$
3. 1
4. -1
5. -1
6. $+\infty$
7. 0
8. $\infty$
9. $\frac{2}{\pi}$
10.a) $-\frac{1}{12}$
10. There is a typo on the original question.
b) $\frac{1}{24}$
11. $-\frac{1}{2}$
12. 

$$
\begin{aligned}
f(0) & =2 \\
f^{\prime}(0) & =\frac{1}{64}
\end{aligned}
$$

