

Full Name: _____

1. Given all of the following information about a function f , sketch its graph.

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- $f(x) = 0$ at $x = -5, x = 0$ and $x = 5$
- $\lim_{x \rightarrow -\infty} f(x) = \infty$
- $\lim_{x \rightarrow \infty} f(x) = -3$
- $f'(x) > 0$ for $-3 < x < 2$ and for $x > 7$
- $f'(x) < 0$ for $x < -3$ and $2 < x < 7$
- $f''(x) > 0$ for $x < 0$ and $5 < x < 8$
- $f''(x) < 0$ for $0 < x < 5$ and $x > 8$

2. Find the derivatives of the following functions. No explanation is necessary.

(a) $x^\pi + \pi^x$

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(b) $2e^x - 3x^2\sqrt{x}$

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