10. [9 points] For each part of this problem, circle **all** of the expressions which could be formulas for the function described. There could be more than one answer for each part.

a. [3 points] The function $f(x)$ satisfies $\lim\limits_{x \to -\infty} f(x) = +\infty$. Then $f(x)$ **could** be:

$$7x \qquad\qquad \tan(5\pi x) \qquad\qquad 3^{-x} \qquad\qquad x^4 + 6$$

$$\ln(10x - 1) \qquad\qquad \sin\left(\frac{\pi}{2}(x+1)\right) \qquad\qquad \text{NONE OF THESE}$$

b. [3 points] The function $k(x)$ has a vertical asymptote at $x = \dfrac{1}{10}$. Then $k(x)$ **could** be:

$$7x \qquad\qquad \tan(5\pi x) \qquad\qquad 3^{-x} \qquad\qquad x^4 + 6$$

$$\ln(10x - 1) \qquad\qquad \sin\left(\frac{\pi}{2}(x+1)\right) \qquad\qquad \text{NONE OF THESE}$$

c. [3 points] The function $j(x)$ is periodic with period 4. Then $j(x)$ **could** be:

$$7x \qquad\qquad \tan(5\pi x) \qquad\qquad 3^{-x} \qquad\qquad x^4 + 6$$

$$\ln(10x - 1) \qquad\qquad \sin\left(\frac{\pi}{2}(x+1)\right) \qquad\qquad \text{NONE OF THESE}$$