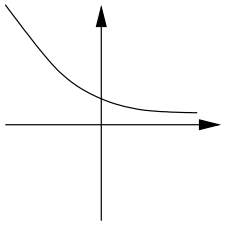
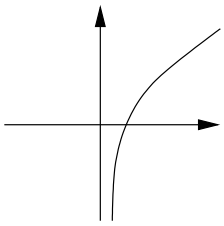
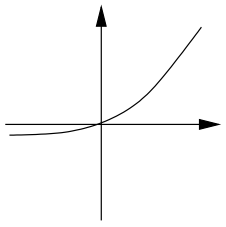
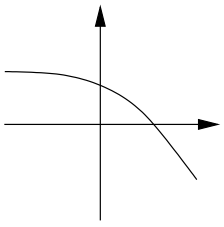
Class prep quiz on sections 1.4–1.5, Stewart's Calculus (8th ed.)

1. Which of the following graphs most closely resembles the graph of a function of the form $f(x) = a^x$ for some $a > 0$?

(a) 

(b) 

(c) 

(d) 

2. Which of the following functions has an inverse? (Assume standard domains.)

   (a) $f_1(x) = x^2$ (b) $f_2(x) = \sin x$
   (c) $f_3(x) = \sqrt{x}$ (d) $f_4(x) = x^3 - x$

3. Which of the following expressions can **not** be expanded by applying a law of logarithms?

   (a) $\ln((x+2)(x+7))$ (b) $\log((x-1)^7)$
   (c) $\log_7\left(\dfrac{x+2}{x-3}\right)$ (d) $\log(x^2+4)$

4. It is a fact that $\tan\left(\dfrac{7\pi}{6}\right) = \dfrac{1}{\sqrt{3}}$. What is the value of $\tan^{-1}\left(\dfrac{1}{\sqrt{3}}\right)$?

   (a) $\dfrac{\pi}{6}$ (b) $-\dfrac{\pi}{6}$ (c) $\dfrac{7\pi}{6}$ (d) $\dfrac{\pi}{3}$