6. [9 points] Bubble in the blanks for **all possible** correct choices. Use pencil in case you need to change your answer. *You do not need to show work for any part of this problem.*

a. Which of the functions below have the property that: $\lim_{x\to\infty} f(x) = \infty$?

- ◯ $f(x) = \dfrac{9}{x^5}$
- ◯ $f(x) = \dfrac{x^9+5}{2^x+x^2}$
- ◯ $f(x) = \dfrac{x^2}{e^{-x}}$
- ◯ $f(x) = \dfrac{x^{\frac{1}{3}}}{\ln(x)}$
- ◯ NONE OF THE ABOVE

b. Which of the following functions have at least one *horizontal* asymptote?

- ◯ $f(x) = \log(5x)$
- ◯ $f(x) = \dfrac{5x^5-x^2}{x^5+x^4}$
- ◯ $f(x) = \dfrac{2}{x^3-x-17}$
- ◯ $f(x) = e^{3x}+1$
- ◯ $f(x) = \dfrac{x^3+x+71}{x^2-81}$
- ◯ NONE OF THE ABOVE

c. Which of the following functions have at least one *vertical* asymptote?

- ◯ $f(x) = \dfrac{1}{x-5}$
- ◯ $f(x) = \ln(x)+5$
- ◯ $f(x) = \dfrac{x^2(x-1)^2}{(x-1)}$
- ◯ $f(x) = \dfrac{x^2-2x+5}{x^2+1}$
- ◯ NONE OF THE ABOVE

d. In which of the following equations is y directly proportional to x^2?

- ◯ $y = 2x$
- ◯ $y = 2x^2$
- ◯ $y = \dfrac{4}{x^2}$
- ◯ $y = x^2-5$
- ◯ $y = \dfrac{\sqrt{7}x^2}{3}$
- ◯ NONE OF THE ABOVE