

Name: ANSWERS

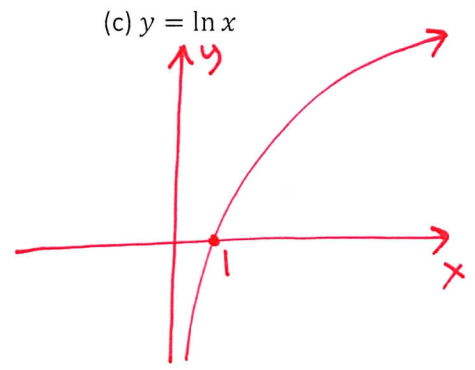
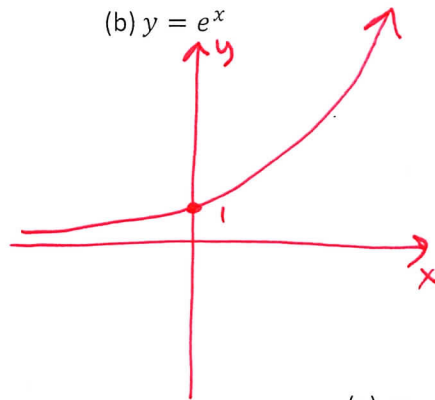
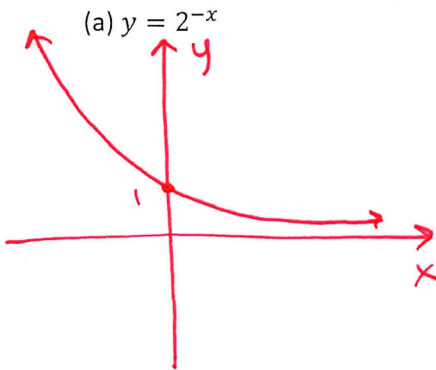
Instructions: No calculators! Answer all problems in the space provided! Do your rough work on scrap paper.

1. Complete the following rules:

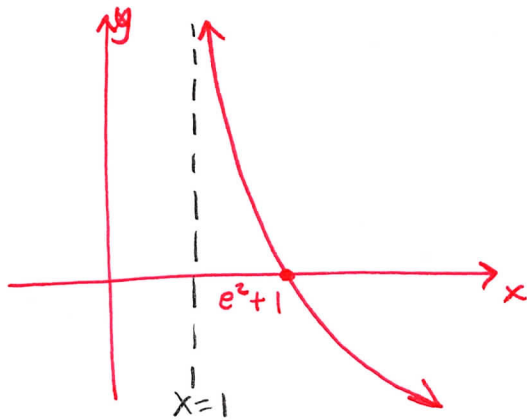
(a) $x^n \cdot x^m = X^{n+m}$ (b) $x^{-a} = \frac{1}{x^a}$ (c) $x^{m/n} = \sqrt[n]{x^m}$ (d) $\frac{x^n}{x^m} = X^{n-m}$

(e) $x^2 - y^2 = (x-y)(x+y)$ (f) $x^3 - y^3 = (x-y)(x^2 + xy + y^2)$

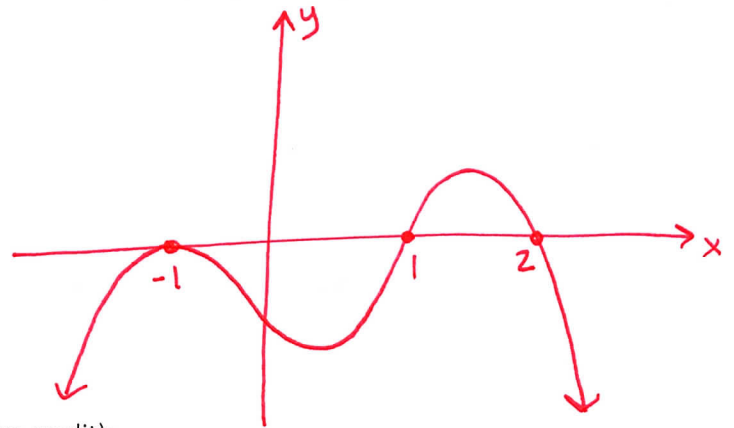
2. Graph the following, indicate all intercepts and asymptotes, provided they exist. Show their values on your sketch:



(d) $y = -\ln(x-1) + 2$



(e) $y = (1-x)(x-2)(x+1)^2$



Bonus (after attempting the problems above, do these for extra credit):

1. Simplify: $\ln \sqrt{\frac{x^2-1}{x(x+3)^3}} = \frac{1}{2} [\ln(x-1) + \ln(x+1) - \ln x - 3 \ln(x+3)]$

2. Solve for x : $e^{3x-2} = 10 \Rightarrow x = \frac{2 + \ln 10}{3}$

3. Suppose a bank account grows at an interest rate of r per year, and suppose the interest is compounded continuously. If $P(t)$ represent the balance in the account after time t , and the initial principal is P_0 , write down a formula for $P(t)$:

$P(t) = P_0 e^{rt}$