Last Name: _____ First Name: _____ Uid: _____

1(a). _____

1(b). _____

1(c). _____

1(d). _____

1(e). _____

1(f). _____

2(a). _____

2(b). _____

2(c). _____

2(d). _____

2(e). _____

2(f). _____

3(a). _____

3(b). _____

3(c). _____

3(d). _____

3(e). _____

3(f). _____

4. _____

5(a). _____

5(b). _____

6. _____

7(a).

7(b).

x-intercept: _____

x-intercept _____
asymptotes: x=_____

7(c).

7(d).

y-intercept: _____

x-intercept _____

7(e).

7(f).

y-intercept: _____

x-intercept _____

7(g).

7(h).

MATH 1050-006
Practice exam 3

Question:	1	2	3	4	5	6	7	Total
Points:	6	18	18	3	8	3	44	100
Score:								

1. $\boxed{6 \text{ points}}$ Decide whether the following statements are true or false.

    (a) ———— $\log_a(\frac{z}{w}) = \log_a(z) + \log_a(w)$

    (b) ———— $(a^x)^y = a^{x+y}$

    (c) ———— $\dfrac{a^x}{a^y} = a^{x-y}$

    (d) ———— $a^x a^y = a^{xy}$

    (e) ———— $\log_a(zw) = \log_a(z) + \log_a(w)$

    (f) ———— $\log_a(z^w) = (\log_a(z))^w$

2. $\boxed{18 \text{ points}}$ Calculate.(Write the answer as a single number)

    (a) $5^{234} 5^{-230} 25^{-1}$

    (b) $(2^{\frac{9}{13}})^{\frac{13}{3}}$

    (c) $(\dfrac{16}{9})^{\frac{3}{2}}$

    (d) $\log_{\frac{1}{3}}(27)$

    (e) $\log_{10}(10,000)$

    (f) $\log_3(\dfrac{1}{\sqrt[6]{9}})$

3. $\boxed{18 \text{ points}}$ Solve for x if

    (a) $e^{-x} = 7$. (No need to simplify the answer.)

    (b) $\log_{\frac{1}{10}} x = -4$.

    (c) $5^x + 10 = 15$.

    (d) $e^{-x^2} = e^{x+5} e^{-11}$.

    (e) $5e^{-2x+1} = 9$ (No need to simplify the answer.)

(f) $\log_3(-x) - \log_3(-x-1) = 2$.

4. $\boxed{3 \text{ points}}$ Find a root of $x^4 + x^3 + 7x - 9$. (Only ONE root is enough)

5. $\boxed{8 \text{ points}}$ Completely factor the following polynomials.(Your answers should consist of a product of a real number, monic linear polynomial(s), and monic quadratic polynomial(s) without root)
   (a) $-9x - 16$

   (b) $x^3 + 2x^2 - 2x - 1$(hint: factors of the term without x are possible roots)

6. $\boxed{3 \text{ points}}$ What is the smallest integer that is **greater** than $\log_{10}(1227)$?

7. $\boxed{44 \text{ points}}$ Graph the following functions as precisely and clearly as possible, and write down required numbers/coordinates (Might include x-,y-intercept, and/or the vertex. See answer sheet for details.):

   (a) $f : \mathbb{R} \to \mathbb{R}, f(x) = -4x^5(x-2)^2(x+1)(x^2+9)$

   (b) $f : \mathbb{R} - \{1,3\} \to \mathbb{R}, f(x) = \dfrac{2(x+2)(2x^2+1)}{-5(x-1)(x-3)^2}$

   (c) $f : \mathbb{R} \to \mathbb{R}, f(x) = e^x$

   (d) $f : \mathbb{R} \to \mathbb{R}, f(x) = \log_e(x)$

   (e) $f : \mathbb{R} \to \mathbb{R}, f(x) = e^x - 2$

   (f) $f : (-3, \infty) \to \mathbb{R}, f(x) = \log_{\frac{1}{2}}(x+3)$

   (g) $f : (-2, 1] \to \mathbb{R}, f(x) = 3x$ (Watch out for the domain!)

   (h) $f : [-1, 2) \to \mathbb{R}, f(x) = x^3$ (Watch out for the domain!)

Scratch paper