

MATH 113 – PRACTICE TEST 1 (P.2 – 2.4) Work on other pages and number all your work. **Hand in a photocopy** –keep your original to use for the in-class review. Write your name on all pages.

Instructions: Do all problems on separate pages. Point values are in [] brackets—this assignment will be worth a total of 20 points (instead of the usual 10). Mark your answers clearly and write them in simplified form. **You must show all appropriate work in order to receive full credit for an answer.** Show work algebraically and find exact answers unless otherwise indicated.

1(a). [1] Find the equation of the line that passes through the point $(3, -1)$ and is parallel to the line $2x - y = 16$.

(b) [1] Given $f(x) = x^2 - 1$, find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$.

2. (a). [1] Determine the equation and slope of a horizontal line through the point $(-2, 4)$.

(b). [1] If the discriminant of a quadratic equation has a negative value, the equation has how many real solutions?

(c). [1] State the domain of the function $g(x) = \frac{x-1}{\sqrt{x+1}}$, using interval notation.

3. [1 ea.] Solve for x , showing your algebraic work.

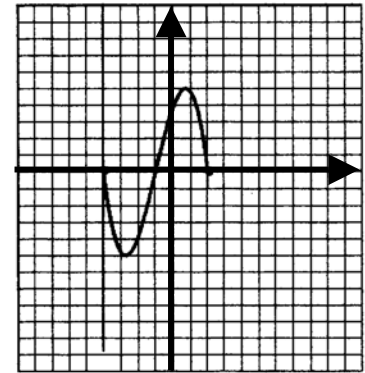
(a) $x^2 = 20 + 10x$ (b) $\frac{1}{x-2} - \frac{3}{x} = \frac{1}{x-2}$ (c) $(x-1)^{\frac{4}{3}} = 16$

(d) $9x = B - Ax$

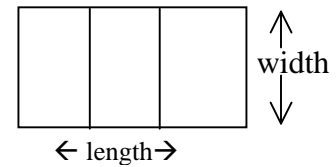
4. [2 total] From the graph of a function h to the right (the entire function is pictured), determine the following (estimating to the nearest tenth when necessary):

(a). the domain of h (b). the range of h (c). the y -intercept

(d). the values of x for which $f(x) = 0$ (e). the interval(s) on which h is increasing



5. [2] A farmer has 200 feet of fencing with which he wants to enclose three adjacent corrals (see sketch to the right). What measurements will produce an enclosed area of 1200 square feet? Set up a mathematical model (equation), stating clearly what each variable represents, then do the work to answer the question.



6(a). [1] Given $m(x) = \sqrt{x^2 + 9} + 3x^{-2}$, find $m(-3)$. (b) [1] Simplify $\frac{\frac{1}{2x} - 3}{\frac{1}{5x^2}}$.

(c) [1] Simplify, writing the result with only positive exponents: $\left(\frac{32}{x^5}\right)^{-\frac{2}{5}}$.

(d) [1] Simplify $\sqrt{4x^2 + 36}$. (e) [1] Simplify without using a calculator. Show your steps. $\frac{250}{0.05}$.

7. A model rocket is fired upward from ground level at an initial velocity of 60 feet per second. (Use the position equation

$$s = -16t^2 + v_0t + s_0)$$

(a) [1] Determine how long it will take for the rocket to come back down to the ground.

(b) [1] How high above ground is the rocket after 2 seconds?

Copy the following pledge and sign your name:

I pledge on my honor that I have not given or received any unauthorized assistance on this practice test.