

# MA 160/ELEMENTARY APPLIED PRETEST

**SHOW ALL WORK.**

**CIRCLE YOUR ANSWERS.**

**WRITE YOUR EXACT ANSWERS UNLESS OTHERWISE INSTRUCTED.**

1. Solve for  $x$ .

a.  $8x - (2x - 1) = 3x - 10$

b.  $(x + 7)(x - 1) = (x + 1)^2$

c.  $1 - Ax - B = 0$

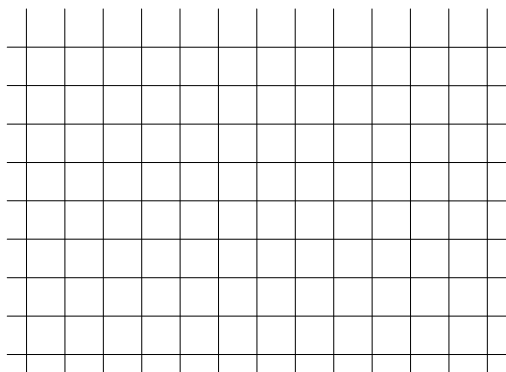
d.  $8 + 4(2 - x) \leq -2x$

e.  $\sqrt{x + 6} = x$

f.  $\frac{3}{x + 2} = 5$

2. Given  $2x - 3y = -6$

a. Graph the equation.



b. Determine the slope and y-intercept.

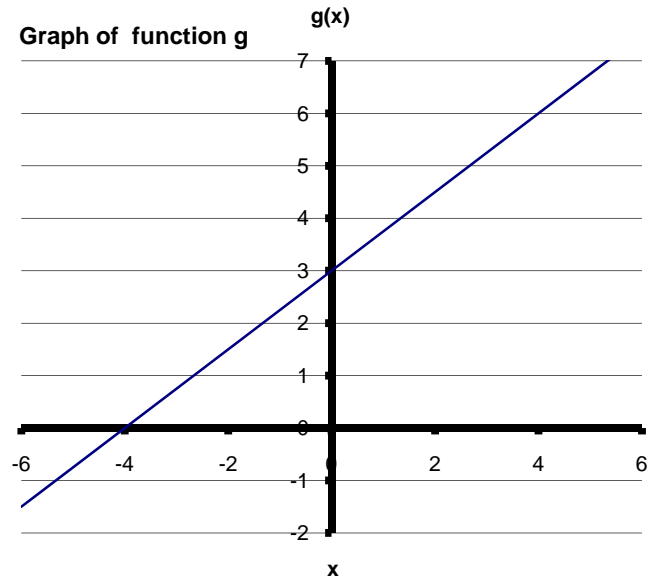
c. Select two points on the line and use them to confirm, algebraically, that the slope you calculated from part (b) is correct.

3. Answer these questions about the function  $g$  that is graphed at the right.

a.  $g(4) = \underline{\hspace{2cm}}$

b. If  $g(a) = 3$ , then  $a = \underline{\hspace{2cm}}$

c. The *zero* of function  $g$  is  $\underline{\hspace{2cm}}$



4. Solve the system of equations by any algebraic method.  $\begin{cases} 2x + 11y = 9 \\ 4x - 8y = 0 \end{cases}$

5. Each of parts to this question should be answered **without** the aid of a calculator.

a. Complete the table on the right for  $f(x) = 3^x$

b. For the same function  $f$ , determine the exact values of these:

$x$	$f(x)$
0	
1	
2	
3	

$f(-1) = \underline{\hspace{2cm}}$ ,  $f(-2) = \underline{\hspace{2cm}}$ ,  $f(-3) = \underline{\hspace{2cm}}$

6. **Without** the aid of a calculator determine the exact values of the following

a.  $\left(\frac{9}{16}\right)^{-1}$       b.  $\left(\frac{9}{16}\right)^{\frac{3}{2}}$       c.  $(8)^{-3}$       d.  $(8)^{\frac{1}{3}}$

e.  $\log_3 81 = \underline{\hspace{2cm}}$       f.  $\log_3 1 = \underline{\hspace{2cm}}$

7. Simplify without the aid of a calculator:

a.  $5\sqrt{6}(\sqrt{24})$

b.  $\sqrt{-900}$

c.  $\frac{-7 \pm \sqrt{49 + 120}}{4}$

8. Simplify and write with positive exponents:  $5(x^3)^2(-2x^4)^{-3}$

9. Solve:

Solve by Factoring:

a.  $6m^2 + 26m = 20$

b.  $3x^3 - 27x = 0$

c. Solve using the Quadratic Formula:  $x^2 + 13 = 6x$

10. Given  $g(x) = -x^2 + 9$ :

a. Find  $g(0)$

b. Find  $g(-4)$

c. Find  $f(0)$

d.  $g(x)+5$

e. Solve for  $x$ :  $g(x) = 0$ .

f.  $g(x-5)$

11. Given  $h(x) = 0.5x^3 - 4.5x + 2.8$ , use your graphing calculator to find the following in the standard window. Round your answers to the nearest thousandth.

a. relative minimum

b. relative maximum

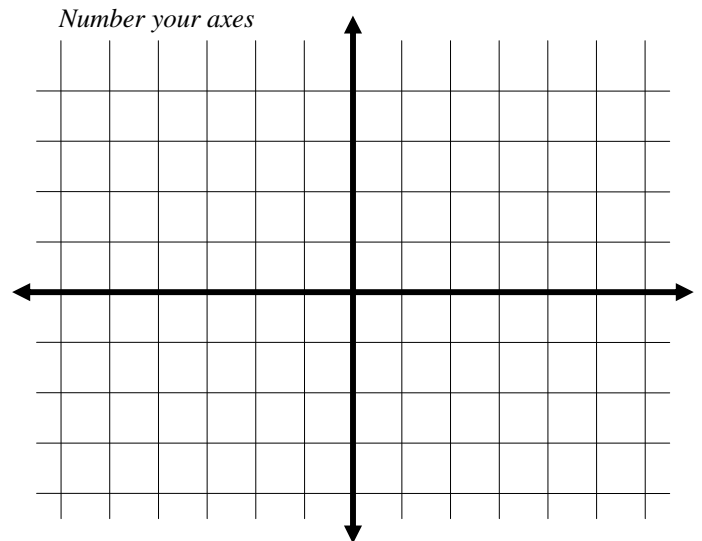
c. each zero of  $h(x)$

12. Given  $f(x) = 3x^2 + \frac{6}{x} - 8$  and  $h(x) = \sqrt{5-x}$

a. State the domain of the function  $f$ .

b. State the domain of the function  $h$ .

13. Graph the quadratic function  $f(x) = x^2 - 8x + 7$  and find the vertex.



Answers to **MA 180/PRECALCULUS PRETEST**

1. a.  $-\frac{11}{3}$     b. 2    c.  $\frac{1-B}{A}$     d.  $x \geq 8$     e. 3    f.  $-\frac{7}{5}$

2. b.  $m = \frac{2}{3}$      $b = 2$

3. a. 6    b. 0    c. -4

4. a.  $(\frac{6}{5}, \frac{3}{5})$

5. a. 

1
3
9
27

    b.  $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}$

6. a. -d.  $\frac{16}{9}, \frac{27}{64}, \frac{1}{512}, 2$     e. 4    f. 0

7. a. 60    b.  $30i$     c.  $5, -1\frac{1}{2}$

8.  $\frac{-5}{8x^6}$

9. a.  $m = \frac{2}{3}, -5$     b.  $x = 0, \pm 3$

c.  $x = 3 + 2i$  or  $x = 3 - 2i$ . These solutions are not real numbers.

10. a. 9    b. -7    c. undefined    d.  $-x^2 + 14$     e.  $x = \pm 3$     f.  $-x^2 + 10x - 16$

11. a. -2.396    b. 7.996    c.  $x = -3.273, 0.653, 2.620$

12. a.  $x \neq 0$     b.  $x \leq 5$

13. vertex: (4, -9)

