Math 1311
Homework 5 (Section 3.1 - Section 3.2)

Record your answers to all the problems in the EMCF titled **" Homework 5"** .

1. The base of a ladder is 5 horizontal feet from the wall where its top rests. The slope of the line made by the ladder is 25. What is the vertical height of the top of the ladder? (Assume that the positive direction points from the base of the ladder toward the wall.)
    a)   2.5 feet
    b)   12.5 feet
    c)   7.5 feet
    d)   2 feet

2. Assume you are standing under a sloped roof with west being the positive direction. The height of the sloped roof above the place where you stand is 20 feet. If you move 4 feet west the height is 11 feet. What is the slope?
    a) $7\frac{3}{4}$ feet per foot
    b) $-2\frac{1}{4}$ feet per foot
    c) $2\frac{1}{4}$ feet per foot
    d) $-\frac{4}{9}$ foot per foot

3. If a building is 120 feet tall and is viewed from a spot on the ground 70 feet away from the base of the building, what is the slope of a line from the spot on the ground to the top of the building? Round your answer to two decimal places.
    a)   0.58
    b)   1.50
    c)   1.71
    d)   2.14

4. Find the point where the line through $(5, 3)$ with slope 3 crosses the vertical axis. [*Note:* Use the fact that for points (a_1, b_1) and (a_2, b_2) in the coordinate plane, we can calculate the slope of the line through these points using $\text{Slope} = \frac{\Delta y}{\Delta x} = \frac{b_2 - b_1}{a_2 - a_1}$.]
    a) $(0, -12)$
    b) $(0, -15)$
    c) $(0, -2)$
    d) $(0, 18)$

5. Suppose that f is a linear function such that $f(7) = 6$ and $f(9) = 10$. Find the equation of f.

a) $f(x) = -13x + 97$

b) $f(x) = 0.27x + 4.11$

c) $f(x) = 5x + 30$

d) $f(x) = 2x - 8$

6. A plane descends in a straight line from a height of 1050 feet towards an airport 70 horizontal miles away. How much has the plane descended after travelling 30 horizontal miles?
   a)   150 feet
   b)   2 feet
   c)   600 feet
   d)   450 feet

7. Section 3.1 Skill Building Exercise S-12

a) $m = \frac{-5}{3}$ b) $m = 7$ c) $m = \frac{4}{3}$ d) $m = \frac{5}{3}$

8. Section 3.1 Exercise 2

a)   -3   b) -5   c) 3   d) 5

9. Section 3.1 Skill Building Exercise S-14

a) $x = 0.41$ b) $x = 0.25$ c) $x = 0.54$ d) 0.37

10 Section 3.1 Exercise 4

a)   20   b) -20   c) -18   d) 18

11. Section 3.1 Skill Building Exercise S-16

a) $x = 0$ b) $x = 2$ c) $x = 2.5$ d) 3

12. Section 3.2 Skill Building Exercise S-2

a) $m = \frac{-5}{3}$ b) $m = 7$ c) $m = \frac{-4}{5}$ d) $m = \frac{5}{3}$

13. Section 3.2 Exercise 2b

a) 62 degrees   b) 58 degrees   c) 69 degrees   d) 72 degrees

14. Section 3.2 Exercise 4b

a) 3.69 years   b) 5.53 years   c) 6.33 years   d) 7.85 years

15. Section 3.2 Skill Building Exercise S-4

a) 37.2   b) 23.7   c) 73.5   d) 64.5

16. Section 3.2 Exercise 6b

a) Slope $= 2$ b) Slope $= 130$ c) Slope $= 5$ d) Slope $= 6$
Initial Value $= 130$ Initial Value $= 2$ Initial Value $= 30$ Initial Value $= 2$

17. Section 3.2 Exercise 6d

a) 6   b) 7   c) 8   d) 9

18. Section 3.2 Skill Building Exercise S-6

a) 3.58   b) 8.17

c) 7.26   d)6.15

19. Section 3.2 Skill Building Exercise S-8

a) $y = -3x + 14$

b) $y = 5x + 20$

c) $y = -7x + 35$

d) $y = x + 17$

20. Section 3.2 Skill Building Exercise S-10

a) $y = \frac{-9}{4}x + \frac{52}{4}$

b) $y = \frac{9}{4}x + \frac{52}{4}$

c) $y = \frac{-9}{4}x + \frac{47}{4}$

d) $y = \frac{9}{4}x + \frac{47}{4}$