

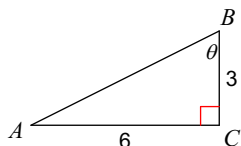
SM3-A HW #12-11 (Unit 12 Test Preview #1)

1) A rectangle with a width of  $(x - 5)$  feet and a length of  $(2x + 6)$  feet has an area of 200 square feet. What is the rectangle's width and length?

2) It takes Jenny eight hours to pick forty bushels of apples. Danielle can pick the same amount in 12 hours. Find how long it would take them if they worked together.

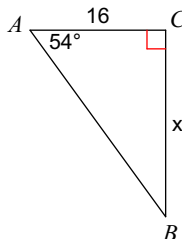
**Find the measure of each angle indicated. Round to the nearest tenth.**

3)



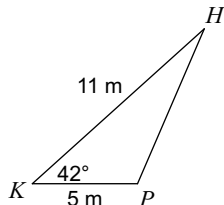
**Find the measure of each side indicated. Round to the nearest tenth.**

4)



**Find the area of each triangle to the nearest tenth.**

5)



6) Solve for  $b_2$ :

$$A = \frac{1}{2}h(b_1 + b_2)$$

7) Solve for c:

$$E = mc^2$$

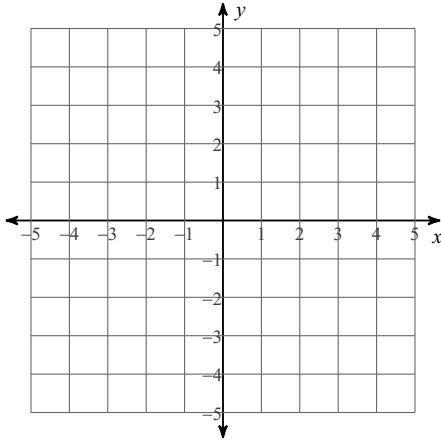
8) A sphere has a radius of 25 feet. It has a mass of 10,000 lbm. What is the density of the sphere? Round to the nearest 1/10th.

9) A cone has a radius of 2 feet and a height of 6 feet. It has a mass of 5000 lbm. What is the density of the cone? Round to the nearest 1/10th.

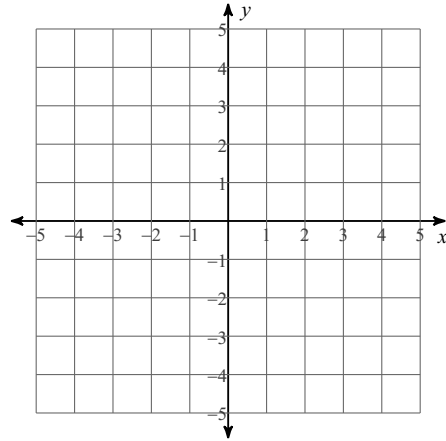
Sketch the solution to each system of inequalities.

10)  $y \leq -\frac{1}{3}x + 2$

$y > -\frac{1}{3}x + 1$



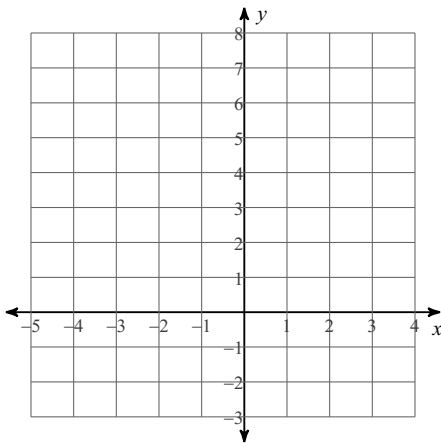
11)  $x + 3y \geq 9$   
 $x - 3y \geq -3$



12) Graph the solution to the system of inequalities.

$y > x^2 - 2$

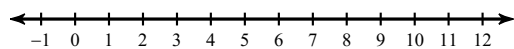
$y \leq -|x - 1| + 3$



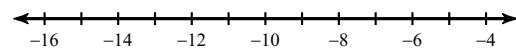
Write the solution to each compound inequality three different ways:

(1) simplified inequality, (2) graph, (3) interval notation.

13)  $-4x < -28$  or  $x - 7 \leq -3$



14)  $9m > -90$  and  $\frac{m}{2} \leq -4$



- 15) Write the solution to the quadratic inequality:  
(1) simplified inequality  
(2) graph  
(3) interval notation

$$0 \leq x^2 - 2x - 8$$

- 16) a) How was the quadratic formula developed? (Write one or two sentences)
- b) What is the purpose of using the quadratic formula?

**Solve each equation with the quadratic formula.**

17)  $5x^2 + 11x - 4 = 0$

18)  $5v^2 - 4v + 6 = 0$

- 19) Write the equation of a line that passes through:  $(3, -4)$  and  $(1, 4)$

- 20) The amount of money in a bank account (as a function of time) that is compounded is given by

$$A(t) = P \left( 1 + \frac{r}{k} \right)^{kt}$$

where P is the "principal", 'r' is the annual interest rate, 'k' is the number of times interest is paid per year, and 't' is the number of years the money has been in the account. How long does it take for the principal to triple in an account earning 10.5% annual interest compounded monthly. Solve using logs.

**Find the inverse of each function.**

21)  $g(x) = \frac{4x}{5x - 6} - 7$

$$g^{-1}(x) = ?$$

**Solve each equation.**

22)  $2 \log_{11} (n + 7) = 4$

**Solve each equation. Round your answers to the nearest ten-thousandth.**

23)  $e^{7.2x} - 5 = 38$

**Solve each system by elimination. Show your work! (No work--no points).**

24)  $7x + 3y = -13$   
 $-7x + 3y = 1$

**Find all zeros.**

25)  $f(x) = 2x^3 - 3x^2 - 2x$

26)  $f(x) = x^4 - 4x^2 - 32$

**Solve the system.**

27)  $4x - 6y + 2z = 0$   
 $-2x - 5y - z = 24$   
 $2x + y + 2z = -15$