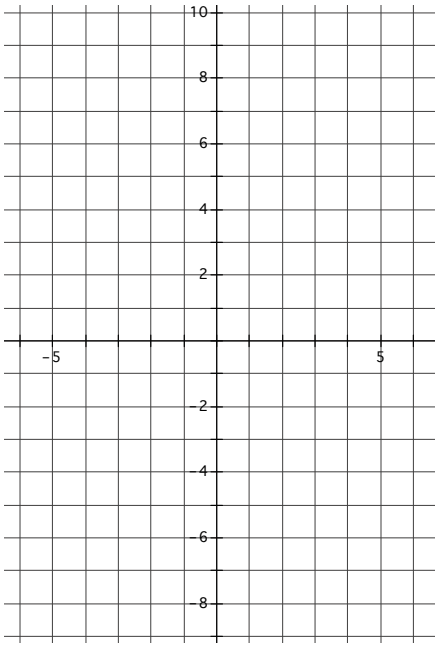
ALG III Semester 2 Exam Review Name:_____

1. Given $g(x) = \frac{1}{2}x - 3$

   a. Graph $g(x)$.

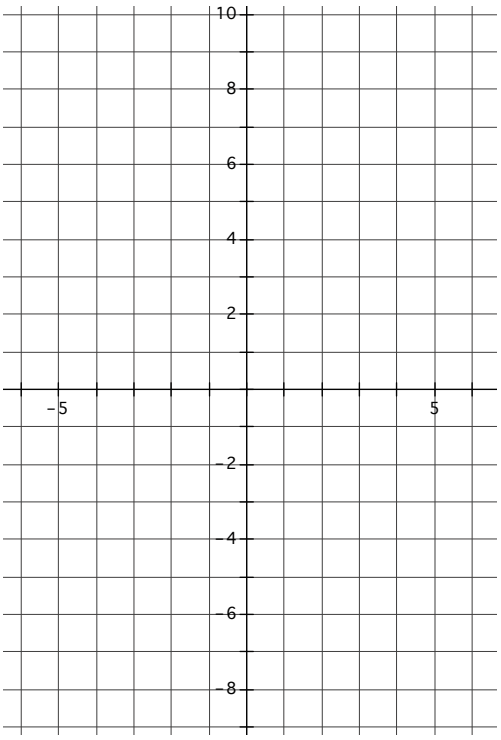
   b. Graph $g^{-1}(x)$ on the same grid.

   c. Algebraically determine the equation of $g^{-1}(x)$.



2. Graph each exponential equation.

   a. $f(x) = -3(2)^x + 4$



3. Given $\log_6 4 \approx 0.6$ and $\log_6 11 \approx 1.1$, find:

a. $\log_6 66$ b. $\log_6\left(\frac{11}{4}\right)$ c. $\log_6\left(\frac{6}{11}\right)$

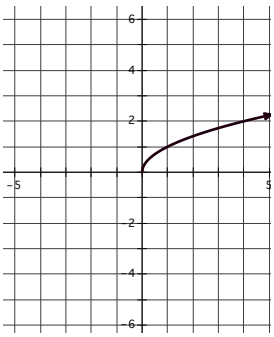
4. Solve. Be sure to check your solutions!

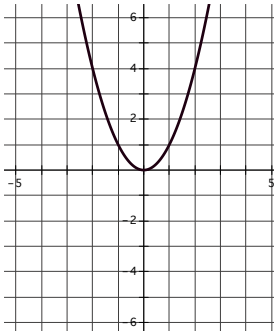
a. $3 \cdot 5^{2x-1} + 6 = 381$ b. $\log_3 x + \log_3(x+5) = \log_3 36$

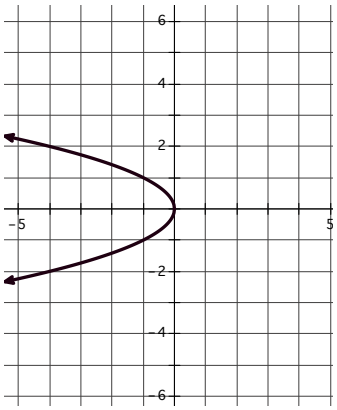
5. Mr. McCord invests \$1500 in a savings account with 2.5% interest, compounded monthly. Find the account balance after 12 years.

6. Mrs. Long invests $5500 in a savings account with 3.8% interest, compounded continuously. How long will it take for her account balance to double?

7. Determine if each graphs represents a one-to-one function.

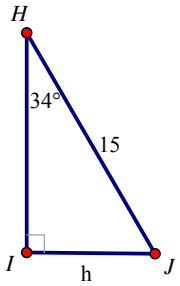




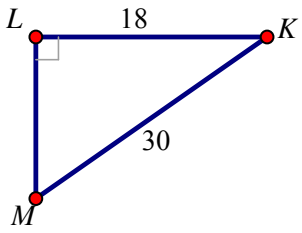


8. Solve for the missing side or angle. Round to three decimal places.

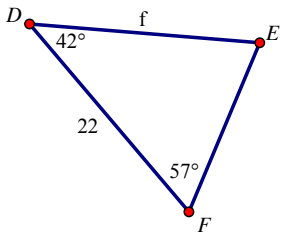
a. Solve for h.



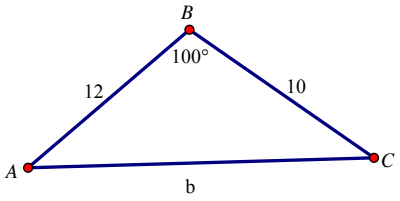
b. Solve for $\angle M$



d. Solve for all missing sides/angles .



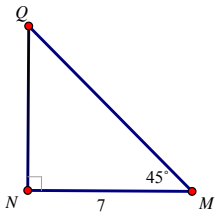
e. Solve for all missing sides/angles.



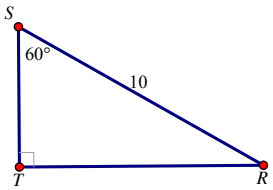
9. Mrs. Long measures the angle of elevation from the ground to the top of a tree to be 80˚. If she is measuring this angle 12 feet from the base of the tree, find the height of the tree. Round to three decimal places.

10. Find the exact value of all missing sides and angles. ****HINT: Use your special right triangles****

a.



b.



11. Draw each angle. Include an arrow representing the amount of rotation. Find the measure of one other angle that is coterminal with the given angle. Give the quadrant of each angle.

a. 4 radian

b. -148°

12. Find the exact value.

a. $\sin 135^\circ$

b. $\csc \frac{3\pi}{4}$

c. $\csc 300^\circ$

d. $\tan\left(-\frac{2\pi}{3}\right)$

e. $\sin 120^\circ$

f. $\cos\frac{4\pi}{3}$

13. Sketch a right triangle where $\sin\theta = \frac{3}{5}$ and $\frac{\pi}{2} \le \theta < \pi$. Find the exact values of the remaining trig functions.

$\sin\theta = \frac{3}{5}$ $\quad\quad$ $\csc\theta =$

$\cos\theta =$ $\quad\quad$ $\sec\theta =$

$\tan\theta =$ $\quad\quad$ $\cot\theta =$

14. Simplify.

a. $\sin\theta\cot\theta\cos\theta$

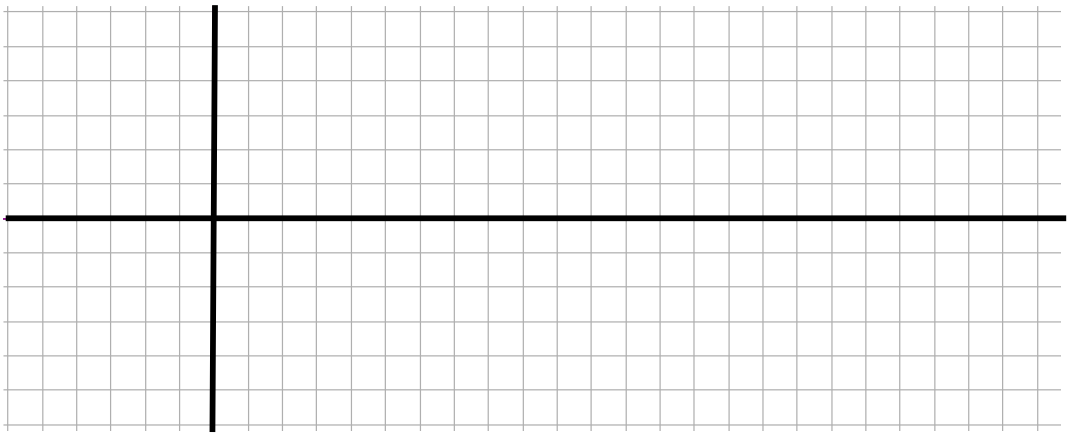
15. Find the solution set where $0 \le \theta < 2\pi$

a. $\sin\theta = \frac{1}{2}$

c. $2\cos\theta + 3 = 4$

d. $2\cos^2\theta - \sqrt{3}\cos\theta = 0$

16. Graph $f(\theta) = -3\cos 2\left(\theta - \frac{\pi}{6}\right) + 1$



17. Write two equations for this graph, one using sine and one using cosine.