Name _____ College Pre-Calc

Final Exam Review #5

1. Determine if $g(x)=\begin{cases}-x^2+4 & x\le 1\\ 6x-1 & x>1\end{cases}$ is continuous at x = 1

2. Find the value of b for which $h(x)=\begin{cases}5x-7 & x\le -1\\ b+4x & x>-1\end{cases}$ is continuous at x = -1

3. Using $f'(x)=\lim_{h\to 0}\dfrac{f(x+h)-f(x)}{h}$

   a) Find the derivative of $f(x)=2x^2-3x$

   b) Find the equations of the tangent & normal lines at x = -3

4. Complete the square to find the standard form of the ellipse. Find the center, foci and vertices.

   $x^2+9y^2+8x-18y+16=0$

5. Verify the identity: $\dfrac{\csc x}{\sin x}-\dfrac{\cot x}{\tan x}=1$

6. In ΔABC, $a=24, b=36$ and $c=30$. Find $m\angle A$ to the nearest tenth of a degree.

7. In ΔABC, $m\angle A=40$, $m\angle C=65$ and $c=12$. Find the length of a to the nearest integer.

8. Two forces act on a body at an angle of 100°. The forces are 30 pounds and 40 pounds.

   a) Find the magnitude of the resultant force to the nearest tenth of a pound.

   b) Find the angle formed by the greater of the two forces and the resultant force to the nearest degree.

9. Solve the system of equations:

$$\begin{aligned}4x-3y+z&=-10\\ 2x+y+3z&=0\\ -x+2y-5z&=17\end{aligned}$$