

AP Calculus  
1.1 Worksheet

*All work must be shown in this course for full credit. Unsupported answers may receive NO credit.*

- Write the equation of the line that goes through the points  $(-3, 7)$  and  $(4, 5)$  in
  - point-slope form
  - slope-intercept form
  - standard form
- Write an equation of the line that passes through the point  $(12, 15)$  and
  - is parallel to the  $x$ -axis
  - is parallel to the  $y$ -axis
- Find an equation of the line tangent to a circle with radius 5 and center  $(0,0)$  at the point  $(3, 4)$ .  
*Hint: A Tangent Line to a circle is always perpendicular to the radius at the point of tangency.*
- For what value of  $k$  are the two lines  $2x + ky = 3$  and  $x + y = 1$ 
  - parallel
  - perpendicular

5. The relationship between Fahrenheit and Celsius temperatures is linear.

a) Using the fact that water freezes at  $0^{\circ}\text{C}$  or  $32^{\circ}\text{F}$ , and water boils at  $100^{\circ}\text{C}$  or  $212^{\circ}\text{F}$  (not your recollection of temperature formulas) find a linear equation that relates Celsius and Fahrenheit.

b) *Using your equation*, find the Celsius equivalent of  $80^{\circ}\text{F}$  and the Fahrenheit equivalent of  $-10^{\circ}\text{C}$ .

c) Is there a temperature at which a Fahrenheit and a Celsius thermometer give the same reading? If so, what is it?

6. The pressure  $p$  experienced by a diver under water is related to the diver's depth  $d$  by an equation of the form  $p = kd + 1$ , where  $k$  is a constant. When  $d = 0$  meters, the pressure is 1 atmosphere. The pressure at 100 meters is 10.94 atmospheres. Find the pressure at 50 meters.

7. Consider the point  $P(-2, 1)$  and the line  $L: x + y = 2$ .

a) Find the slope of  $L$ .

b) Write an equation for the line through  $P$  and parallel to  $L$ .

c) Write an equation for the line through  $P$  and perpendicular to  $L$ .

d) What is the  $x$ -intercept of  $L$ ?