If $f(x) = \begin{cases} 4-5x, & x \le -2 \\ 0, & -2 < x < 2, \\ x^2 + 1, & x \ge 2 \end{cases}$ find f(4).





A kitchen appliance manufacturer determines that the total cost C (in dollars) of producing n blenders SCORE: / 2 PTS is given by $C = 25n + 3{,}500$ (where n > 0). Explain what the slope and C – intercept measure. THE SLOPE TELLS US IT COSTS \$25 TO PRODUCE 1 BLENDER THE C-INTERCEPT TELLS US IT COSTS \$ 3,500 TO PRODUCE O BLENDERS (EG, RENT, UTILITIES, MACHINES)

A real estate office handles an apartment complex with 60 units. When the rent per unit is \$940, all the units SCORE: _____/ 5 PTS are occupied. However, when the rent is \$1000, the number of occupied units drops to 55. Assume that the relationship between the monthly rent p and the demand x is linear.

[a] Write the **point-slope form** of the equation of the line giving the demand x in terms of the rent p.

$$m = \frac{x_2 - x_1}{P_2 - P_1} = \frac{55 - 60}{1000 - 940} = \frac{-5}{60} = -\frac{1}{12}$$

$$x - 55 = -\frac{1}{12}(p - 1000) \quad or \quad x - 60 = -\frac{1}{12}(p - 940)$$

[b] Use the answer for [a] to predict the number of units occupied when the rent is \$1036.

If $f(x) = 9 + 5x + 3x^2$ and $g(x) = 4x^2 - 2x - 9$, find all values of x for which f(x) = g(x). **CHECK ALL ANSWERS THAT ARE INTEGERS.**

$$\begin{array}{l} 9+5x+3x^{2}=4x^{2}-2x-9 & \text{CHeck} \\ 0 = x^{2}-7x-18 & f(9)= \\ 0 = (x-9)(x+2) & = \\ x = 9 & \text{or} x = -2 & g(9)^{2} \\ x = -2 & f(-2)=9+5(-2)+3(-2)^{2}=9-10+12=11 \\ g(-2)=4(-2)^{2}-2(-2)-9=16+4-9=11 \end{array}$$

CHECK:

$$x = 9$$

 $f(9) = 9 + 5(9) + 3(9)^{2}$
 $= 9 + 45 + 243$
 $= 297$
 $g(9) = 4(9)^{2} - 2(9) - 9$
 $= 324 - 18 - 9$
 $1 = 297$

If $v(y) = 2 - 2y - y^2$, find v(1 - y).



 $= -1 + 3y - y^{2}$

SCORE: ____ / 4 PTS

Write the **point-slope form** of the equation of the line through (-4, -1) and perpendicular to the line 6x + 2y = 9.

$$2y = -6x+9$$

$$y = -3x+2$$

$$m_{1} = -3$$

$$m_{2} = \frac{1}{3}$$

$$y - -1 = \frac{1}{3}(x - -4)$$

$$y + 1 = \frac{1}{3}(x + 4)$$

SCORE: _____ / 3 PTS