Last Name: SOLUTIONS

First Name:

Student ID:

Quiz 1

Question 1. *(4 marks)* Simplify the following expression (positive exponents only):

$$\left(\frac{4a^{5/6}b^{-1/5}}{a^{2/3}b^2}\right)^{-1/2} = \frac{(4)^{-1/2}(a^{5/6})^{-1/2}(b^{-1/5})^{-1/2}}{(a^{2/3})^{-1/2}(b^2)^{-1/2}} = \frac{4^{-1/2}\, a^{-5/12}\, b^{1/10}}{a^{-1/3}\, b^{-1}}$$

$$= \frac{a^{1/3}\, b \cdot b^{1/10}}{4^{1/2}\, a^{5/12}} = \frac{a^{1/3-5/12}\cdot b^{1+1/10}}{\sqrt{4}} = \frac{a^{-1/12}\cdot b^{11/10}}{2}$$

$$= \frac{b^{11/10}}{2a^{1/12}}$$

Question 2. *(3 marks)* Solve for x:

$$\frac{4x - 2(x-4)}{3} = 8$$

$$4x - 2(x-4) = 24$$

$$4x - 2x + 8 = 24$$

$$2x = 16$$

$$x = 8$$

Question 3. *(3 marks)* Solve for P:

$$\frac{p}{P} = \frac{AI}{B+AI}$$

$$p(B + AI) = P(AI)$$

$$\frac{p(B + AI)}{AI} = P$$

Question 4. *(5 marks)* Find the equation of the line that is perpenedicular to the line 6x+3y=7 and passes through (12,2). Graph this line (neatly).

$$6x + 3y = 7$$
$$3y = -6x + 7$$
$$y = -2x + \frac{7}{3}$$
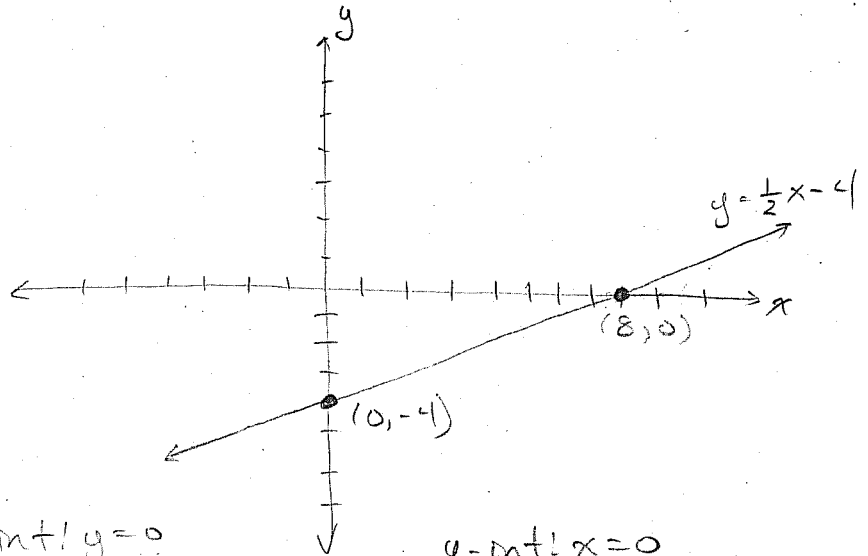$$\therefore m_2 = -2$$
$$\Rightarrow m_1 = \frac{1}{2}$$

$$y = mx + b$$
$$2 = \frac{1}{2}(12) + b$$
$$2 - 6 = b$$
$$-4 = b$$

$$\boxed{y = \frac{1}{2}x - 4}$$

$y = \frac{1}{2}x - 4$

$(8, 0)$

$(0, -4)$

$$x-int! \; y = 0$$
$$0 = \frac{1}{2}x - 4$$
$$4 = \frac{1}{2}x$$
$$8 = x \quad \therefore (8, 0)$$

$$y-int! \; x = 0$$
$$y = \frac{1}{2}(0) - 4$$
$$= -4$$
$$\therefore (0, -4)$$

Question 5. *(4 marks)* The velocity of sound v increases 0.607m/s for each increase in temperature T of 1.00°C. If $v = 343$m/s for $T = 20.0°$C, express v as a function of T.

$$\therefore \quad m = \frac{\Delta V}{\Delta T} = \frac{0.607}{1.00} = 0.607$$

$$V = mT + b$$

$$343 = (0.607)(20) + b$$

$$\therefore \quad 330.86$$

$$\therefore \quad V = 0.607T + 330.86$$