Take Home Quiz 3

Due Tuesday 2/15

Present all work on these sheets (no attachments). Present your solutions logically and neatly and box your answer. Answer word problems with complete sentences including units. Print your name on the back. If you print two sheets, staple them together.

Problem 1 (3 points) Section 1.2 Problem #54 page 70

$$\text{Price} \times \text{Tax} + \text{Price} = \text{Bill}$$

$$x = \text{Bill}$$

$$x = 39.83 \times (0.025) + 39.83$$

$$x = 42.32$$

Megan's bill is $42.32.

Problem 2 (3 points) Section 1.2 Problem #56 page 70

$$\text{Cost} + \text{Markup} = \text{Price}$$

$$\text{Markup} = \frac{\text{Cost} \times \% \text{Markup}}{}$$

Let $$x = \text{Cost}$$, $$\% \text{Markup} = 30\% = 0.3$$, $$\text{Price} = 95$$

$$x + 0.3x = 95$$

$$1.3x = 95$$

$$x = 73.08$$

The cost of the book is $73.08.

Problem 3 (3 points) Section 1.2 Problem #78 page 72

Run: $$d = rt = 7 \times 2 = 14$$

Swim: $$d = \frac{r}{t} = 2 \times 5 = 1$$

The run is 14 miles and the swim is 1 mile.

Problem 4 (2 points) Section 1.6 Problem #98 page 119

$$m = \frac{y}{x} \Rightarrow (2, 1)$$

$$1 = \frac{1}{2}(2) + b$$

$$1 = 1 + b$$

$$0 = b$$

$$y = \frac{1}{2}x$$
**Problem 5 (3 points) Section 1.3 Problem #42 page 79.**

\[ S = 2\pi rh + 2\pi r^2 \]

\[ 2\pi rh = S - 2\pi r^2 \]

\[ h = \frac{S - 2\pi r^2}{2\pi r} \]

\[ h = \frac{72\pi - 2\pi (16)}{2\pi (4)} = \frac{72 - 2(16)}{8} \]

\[ h = \frac{40}{8} \]

The height is 5 cm.

**Problem 6 (2 points) Section 1.6 Problem #108 page 119**

\[ (-3,1) (1,6) \]

\[ m = \frac{6 - 1}{1 - (-3)} = \frac{5}{4} \]

\[ y - y_1 = m(x - x_1) \]

\[ y - 1 = \frac{5}{4}(x + 3) \]

\[ y = \frac{5}{4}x + \frac{15}{4} + \frac{4}{4} \]

\[ y = \frac{5}{4}x + \frac{19}{4} \]

**Problem 7 (2 points) Section 1.7 Problem #44 page 127**

Original line

\[ -2x + 5y - 3 = 0 \]

\[ 5y = 2x + 3 \]

\[ y = \frac{2}{5}x + \frac{3}{5} \]

\[ m = \frac{\Delta y}{\Delta x} \]

For \( \perp \) line \( m_1 = -\frac{1}{m} = -\frac{5}{2} \)

\[ y = -\frac{5}{2}x + b \]

**Problem 8 (2 points) Section 1.1 Problem #90 page 57**

\[ \frac{1}{5}(2a - 5) - 4 = \frac{1}{2}(a + 4) - \frac{7}{10} \]

\[ \text{LCD} = 10 \]

\[ \frac{10}{5}(2a - 5) - 4(10) = \frac{10}{2}(a + 4) - \frac{7}{10} \]

\[ 2(2a - 5) - 40 = 5(a + 4) - 7 \]

\[ 4a - 10 - 40 = 5a + 20 - 7 \]

\[ 4a - 50 = 5a + 13 \]

\[ 4a - 5a = 50 + 13 \]