Take Home Quiz 5  
Due Thursday 3/10

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** (2 points) Problem #106, Page 318

\[ (9a^2 b^{-4})^{-1} \cdot (3ab)^2 = q^{-1} a^{-2} b^4 q a^2 b^{-4} = 1 \]

**Problem 2** (2 points) Problem #86, Page 330

\[ (2x^3 - 3x^2 - 5x + 7)(x^3 + 3x^2 + 6x - 4) = 3x^3 + 9x^2 - 11x + 3 = 3x^3 + 11x + 3 \]

**Problem 3** (2 points) Problem #30, Page 357

\[ 6x^4 y^2 - 40x^3 y^4 + 96xy^5 = 8xy^2(8x^3 - 5x^2 y^2 + 12y^3) \]

**Problem 4** (2 points) Problem #14, Page 144

Let \( x = \text{amt at 10\%} \) then \( 12 - x = \text{amt at 40\%} \)

\[
\begin{align*}
0.1x + 0.4(12-x) &= 2(12) \\
0.1x + 4.8 - 0.4x &= 24 \\
-0.3x &= -2.4 \\
x &= 8 \quad 12-x = 4
\end{align*}
\]

8 liters of 10\% and 4 liters of 40\% are used

**Problem 5** (2 points) Problem #26, Page 369

\[
\begin{align*}
x^2 + 8x + 12 &= (x + 6)(x + 2) \\
(x^2 + 2x + 6x + 12) &= x^2 + 8x + 12 \checkmark
\end{align*}
\]
Problem 6 (2 points) Problem #36, Page 369

\[-p^2 + 3p + 54 = -(p^2 - 3p - 54)\]

\[-p^2 + 3p + 54 = -(p - 9)(p + 6)\]

\[(-3, 6.9) \rightarrow (6.9 + 3) = 3\]

Problem 7 (2 points) Problem #44, Page 369

\[6x^2 - 37x + 6 \rightarrow 1.6, 2.9\]

\[(1.6)(2.9) \rightarrow (1 - x)(2 - x)\]

Try 1.6 for \(a \in C\) since 37 = 36 + 1

\[(6x - 1)(2 - x)\]

Problem 8 (2 points) Problem #44, Page 369

\[x^2 - 56 + 8 \rightarrow 1.8, -8 - 1 = -9\]

\[2.4, -2 - 4 = -6\]

No factors of 8 added together can be = 11

\[Prime\]

Problem 9 (2 points) Problem #78, Page 369

\[r^6 - 6r^3 + 8\]

\[r = r^3\]

Factor \(x^2 - 6x + 8\) \[r^3 - 2r^3 - 2r^3 + 8\]

\[r^3 - 2r^3 - 2r^3 + 8\]

Problem 10 (2 points) Problem #32, and state the domain of \(x\), Page 419

\[\frac{6x - 42}{x^2 - 7x^2} = \frac{6(x - 7)}{x^2(x - 7)}\]

\[\frac{6}{x^2}, x \neq 7\]

\(\text{For: Domain: } \{x \mid x \neq 7\} \text{ is optional}\)