Math 199
Fall, 2005 Name: **Solutions**
Quiz 1 - §§Chapter 0 and 1.1

Circle the letter corresponding to your answer. Circle only one answer per question. There is no partial credit on this quiz.

1. T F $\dfrac{1}{\sqrt[3]{x^2}} = \dfrac{1}{x^{\frac{3}{2}}}$

   Since $\sqrt[3]{x} = x^{\frac{1}{3}}$, we have

$$\begin{aligned}\frac{1}{\sqrt[3]{x^2}} &= \frac{1}{(x^2)^{\frac{1}{3}}} \\ &= \frac{1}{x^{2\cdot\frac{1}{3}}} \\ &= \frac{1}{x^{\frac{2}{3}}}\end{aligned}$$

   So the statement is **False**.

2. T F $(2x-3)^2 = 4x^2 + 9$

$$\begin{aligned}(2x-3)^2 &= (2x-3)(2x-3) \\ &= 4x^2 - 6x - 6x + 9 \\ &= 4x^2 - 12x + 9\end{aligned}$$

   Therefore the statement is **False**.

3. Simplify the $\dfrac{x^4}{3x^2 - x - 2} \div \dfrac{x^3 - 4x}{9x^2 - 4}$

   A. $\dfrac{x^2(3x+2)}{(x-1)(x+2)}$

   B. $\dfrac{x^2(3x-2)}{(x+1)(x+2)}$

   C. $\dfrac{x^3(2x-2)}{(x-1)(x+2)}$

   D. $\dfrac{x^2(3x-2)}{(x-1)(x+2)}$

   E. None of the above

$$\frac{x^4}{3x^2 - x - 2} \div \frac{x^3 - 4x}{9x^2 - 4} = \frac{x^4}{3x^2 - x - 2} \cdot \frac{9x^2 - 4}{x^3 - 4x}$$

$$= \frac{x^4}{(3x+2)(x-1)} \cdot \frac{(3x-2)(3x+2)}{x(x-2)(x+2)}$$

$$= \frac{x^3(3x-2)}{(x-1)(x-2)(x+2)}$$

So the answer is **E**.

For the next problem, show all work to receive full credit. No Work = No Credit.

4. Burnem, Inc. manufactures blank CDs and sells these to a distributor in packs of 500 CDs. If Burnem's total cost and total revenue (in dollars) for x packs of 500 CDs are given by

$$C = 2x + 7920 \text{ and } R = 20x$$

how many packs of 500 CDs must be sold for Burnem to break even?

The break even point occurs when revenue=cost, so

$$2x + 7920 = 20x$$

$$7920 = 18x$$

$$x = 440$$

440 packs must be sold.